FINANCING THE CLEANUP OF THE THREE MILE ISLAND NUCLEAR POWERPLANT

JOINT HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

AND THE

SUBCOMMITTEE ON NUCLEAR REGULATION

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

FIRST SESSION

ON

S. 1606

A BILL TO ESTABLISH A SUPPLEMENTAL INSURANCE FUND ADMINISTERED BY THE SECRETARY OF ENERGY TO PAY THE COSTS OF NECESSARY REMEDIAL ACTION FOLLOWING DAMAGE TO NUCLEAR POWERPLANTS, INCLUDING CERTAIN REMEDIAL ACTION AT THE THREE MILE ISLAND FACILITIES IN PENNSYLVANIA, TO REQUIRE PARTICIPATION IN SUCH FUND BY THE LICENSEES OF NUCLEAR POWERPLANTS AS A CONDITION FOR THE LICENSING AND CONTINUED OPERATION OF SUCH PLANTS, AND FOR OTHER PURPOSES

OCTOBER 20, 1981

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FINANCING THE CLEANUP OF THE THREE MILE ISLAND NUCLEAR POWERPLANT

TUESDAY, OCTOBER 20, 1981

U.S. SENATE, COMMITTEE ON ENERGY AND NATURAL RESOURCES, AND THE SUBCOMMITTEE ON NUCLEAR REGULATION OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, D.C.

The committees met, pursuant to notice, at 10 a.m., in room 3110, Dirksen Office Building, Hon. James A. McClure (chairman of the Energy Committee) presiding.

Present: Senators McClure, Wallop, Simpson, Warner, Nickles, Heinz, Hart, and Bradley.

Also present: Charles A. Trabandt, chief counsel; E. David Doane, counsel; Paul Gilman, professional staff member; Elliot Chakoff, professional staff member; James K. Asselstine, associate counsel of the Environment Committee; and Benjamin S. Cooper and Willis Smith, professional staff members for the minority, Energy Committee.

OPENING STATEMENT OF HON JAMES A. McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The CHAIRMAN. Good morning, ladies and gentlemen. Today, the Energy and Natural Resources Committee and the Environment and Public Works Committee jointly will receive testimony on S. 1606, Senator Heinz' bill to establish a Federal supplemental property insurance fund for nuclear powerplants. The fund would pay the costs of remedial action following damage at nuclear powerplants prospectively, and also certain remedial action at the Three Mile Island reactor facilities. The committees also will review alternatives to finance the TMI cleanup, including the proposal of Pennsylvania Gov. Richard Thornburgh.

This hearing comes in the midst of a swirl of related events, which may give us confidence for the first time that we can move predictably toward final cleanup of the TMI reactor. I want to note at the outset the outstanding leadership of Senator Heinz in spurring action on this issue of national importance in the Senate. Certainly, this joint hearing is a testimony to that outstanding leadership.

I want to stress my view that the TMI cleanup truly is an issue of national importance. While the situation at TMI is stable and safe now, there is no rational reason to allow this potential risk to public health and safety to continue indefinitely. Also, we must not allow the TMI situation to continue to cast a cloud over the nuclear power option and electric utility financing and operations. Finally, the several States which are dependent on electric power from the utilities involved in the TMI situation remain at risk to purchase power and financial instability. Consequently, I am convinced it is time to consider a predictable resolution of the situation.

A most significant factor in the TMI situation is the startup of the TMI-1 reactor. Early licensing action by the NRC, with full protection of public health and safety, would provide another contribution to the financial capability for the cleanup of TMI-2. I will be anxious to receive testimony from the NRC and the utility on the status of TMI-1 startup. We must proceed promptly on this aspect of the TMI issue.

The legislation proposed by Senator Heinz would provide a national property insurance program which would be mandatory on electric utilities with nuclear powerplants. The program would fund the cleanup at TMI and also create a reserve for property insurance coverage of other operating nuclear plants. The Heinz proposal may offer a basis for national action on this issue, particularly insofar as prospective insurance coverage in the future is concerned.

Governor Thornburgh's proposal involves a cooperative cost-sharing plan to finance the cleanup, with contributions from the Federal Government, the Nation's electric utility industry and nuclear industry, the States of New Jersey and Pennsylvania, and the TMI owners. The electric utilities, through the Edison Electric Institute, already have pledged to contribute a fair share under the Thornburgh plan. Most recently, President Reagan in the past week has given the Governor a commitment that the administration will support a multi-year Federal R. & D. program for TMI approximately at fiscal year 1982 levels to complete a series of specified functional tasks. I would note very positively that the President's commitment is quite consistent with the action of the Energy and Natural Resources Committee and the Congress in authorizing the President's fiscal year 1982 TMI R. & D. program for 3 years, at about $37 million per year in the Omnibus Reconciliation Act of 1981.

Secretary of Energy Edwards, the Nuclear Regulatory Commission, Governor Thornburgh, and senior spokesmen for industry, among other witnesses, will review these recent events and the prospects for early action, in the context of the Heinz legislative proposal. The President's commitment will be highlighted by Secretary Edwards and the Governor today. We also anticipate the release of an administration letter to the Governor detailing the commitment.

It is becoming increasingly clear to me that these events and the dialog established with the committees at this hearing can finally lead to a conceptualized "general partnership" between the Federal Government, the States, the industry, and the TMI owners to complete predictably the cleanup. This conceptual general partnership may involve some form of a "partnership agreement" in Federal legislation, as well as some element of the Heinz bill. We hope to get a better grasp on these questions today. But, most important, we are greatly encouraged by events of recent weeks and months.

And, we hope to move now with all due speed to consider the needed "partnership" for final cleanup of TMI.

Thank you.

[The text of S. 1606 follows:]

II

97TH CONGRESS
1ST SESSION

S. 1606

To establish a supplemental insurance fund administered by the Secretary of Energy to pay the costs of necessary remedial action following damage to nuclear powerplants, including certain remedial action at the Three Mile Island facilities in Pennsylvania, to require participation in such fund by the licensees of nuclear powerplants as a condition for the licensing and continued operation of such plants, and for other purposes.

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 10 (legislative day, SEPTEMBER 9), 1981

Mr. HEINZ introduced the following bill; which was read twice and referred jointly to the Committees on Environment and Public Works and Energy and Natural Resources, pursuant to the order of September 9, 1981

A BILL

To establish a supplemental insurance fund administered by the Secretary of Energy to pay the costs of necessary remedial action following damage to nuclear powerplants, including certain remedial action at the Three Mile Island facilities in Pennsylvania, to require participation in such fund by the licensees of nuclear powerplants as a condition for the licensing and continued operation of such plants, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Nuclear Property Insurance Act of 1981".

DEFINITIONS

Sec. 2. As used in this Act, the term—

(1) "onsite property damage" means damage to, or loss of the use of, a nuclear powerplant and property which is located at the site of, and used in connection with, such nuclear powerplant. Such term does not include any damage which may be subject to a claim under section 170 of the Atomic Energy Act of 1954;

(2) "Commission" means the Nuclear Regulatory Commission;

(3) "Secretary" means the Secretary of Energy; and

(4) "fund" means the Nuclear Property Insurance Fund established under section 3 of this Act.

INSURANCE FUND

Sec. 3. (a) Establishment.—There is established in the United States Treasury a Nuclear Property Insurance Fund to be used by the Secretary in carrying out the provisions of this Act.

(b) Credits.—The fund shall be credited with—

(1) premiums, interest. and charges collected under this Act;

(2) earnings accruing to the fund under subsection (d); and

(3) any amounts recovered by the Secretary by subrogation under section 8.

(c) PAYMENTS.—Amounts credited to the fund shall be available—

(1) to make insurance payments under section 4;

(2) to make payments pursuant to section 6 with respect to the Three Mile Island Unit 2 in Pennsylvania; and

(3) to defray the expenses of administering the fund.

(d) INVESTMENTS.—Whenever the Secretary determines that the moneys of the fund are in excess of current needs, he may request the Secretary of the Treasury to invest the excess moneys in obligations issued by the United States.

INSURANCE

SEC. 4. (a) AUTHORITY TO PROVIDE INSURANCE POLICIES; PAYMENT OF CLAIMS; REQUIREMENT OF INSURANCE.—(1) The Secretary shall provide insurance policies under this Act to licensees of nuclear powerplants to supplement the insurance which is available to such licensees from private sources.

(2)(A) Each insurance policy provided pursuant to paragraph (1) shall provide for payment from the fund when the costs of necessary remedial action associated with onsite property damage caused by an accident involving a nuclear reactor, nuclear fuel, or nuclear waste, exceed, with respect to a single incident, the greater of—

(i) $350,000,000, or

(ii) $50,000,000 plus the amount of insurance coverage for such costs which the Secretary determines to be available from private sources.

(B) Payments of insurance by the Secretary under this Act may not exceed, with respect to a single incident, the greater of—

(i) $2,000,000,000, or

(ii) a maximum amount determined by the Commission to be sufficient for the remedial action.

(C) The Secretary in his discretion, may require proof of loss or damage before paying any claim for insurance provided under this Act. If the Secretary questions the validity of a claim, he may deny such claim unless a court of competent jurisdiction determines the validity of such claim in any civil action in which the validity of such claim is an issue.

(b) INSURANCE COVERAGE AS REQUIREMENT FOR LICENSING.—No operating license may be issued by the Commission under the Atomic Energy Act of 1954 for the operation of a nuclear powerplant after the date of enactment of this Act and no such license issued before such date shall remain in effect after the date one hundred and eighty days after such date of enactment unless the licensee—

(1) is insured by the Secretary for the risks of damage, and in the amounts, described in subsection (a); and

(2) has paid the premiums due and payable to the Secretary for such insurance in accordance with section 5.

PREMIUMS, RESERVE, AND ASSESSMENT

SEC. 5. (a) RATES.—(1) The Secretary shall prescribe such insurance premium rates and such coverage schedules for the application of those rates as may be necessary to provide sufficient revenue to the fund to carry out the purposes of this Act.

(2)(A) The premium rates charged by the Secretary for any period shall be based on the reserve requirements set forth in subsection (b) and on the Secretary's assessment of the risks insured. In assessing the risks associated with each insured licensee, the Secretary shall consider the number of nuclear powerplants owned or operated by the licensee, the accident experience record of the licensee, the training and qualifications of the personnel employed or utilized by the licensee and such other factors as the Secretary considers appropriate.

(B) The aggregate amount of premiums paid by all licensees insured under this Act shall not be less than $150,000,000 per year for each year until the Secretary has accumulated a reserve under subsection (b) in the amount of at least $750,000,000.

(b) RESERVE.—(1) The Secretary shall maintain a reserve in the fund sufficient to pay insurance claims made pursuant to insurance agreements entered into under this Act and to make the payments authorized under section 6(b). The amount of such reserve shall be the greater of $750,000,000 or the amount which the Secretary determines to be an actuarially sound reserve.

(2) The Secretary shall rebate pro rata to insured licensees any amount in the reserve which the Secretary determines is in excess of an amount satisfying the requirements of paragraph (1).

(c) ADDITIONAL ASSESSMENT.—Each insurance agreement entered into under this Act shall provide that if the Secretary becomes obligated under any insurance agreement entered into under this Act for any amount in excess of the amount available in the fund, each insured licensee shall pay to the Secretary, at such time, in such amount, and in such manner as may be specified by him, an additional assessment to cover such liability.

PUBLIC HEALTH, SAFETY, AND ECONOMIC RECOVERY AT THREE MILE ISLAND

SEC. 6. (a) COORDINATION AND PLANNING.—(1) The Secretary, in consultation with the Commission, is authorized and directed—

(A) to coordinate the activities of the Federal agencies having responsibilities concerning necessary remedial actions associated with the Three Mile Island Unit 2 in Pennsylvania; and

(B) to prepare a contingency plan to protect public health and safety and to maintain continuity of utility service in the event that the General Public Utilities Corporation is unable to carry out its responsibilities in connection with such Three Mile Island Unit 2.

(2) The contingency plan prepared under paragraph (1)(B) shall include preparation of requests for emergency appropriations or such other resources as may be necessary to carry out emergency activities at such Three Mile Island Unit 2.

(b) REMEDIAL ACTION AT THREE MILE ISLAND.—(1) In addition to providing insurance under section 4 of this Act, the Secretary shall reimburse the General Public Utilities

Corporation from the amounts available in the fund for 75 per centum of the uninsured reasonable costs incurred by the General Public Utilities Corporation after the date of the enactment of this Act for necessary remedial action associated with onsite property damage at such Three Mile Island Unit 2.

(2)(A) Reimbursement may be paid under this section only if the Secretary determines that the States of Pennsylvania and New Jersey have established a joint plan for regulatory and economic actions designed to insure that the General Public Utilities Corporation—

(i) continues utility service;

(ii) achieves economic stability; and

(iii) develops the ability to meet the obligation to pay future surcharges provided in subsection (c).

(B) The plan referred to in subparagraph (A) shall be compatible with the following basic principles:

(i) Financial responsibility for the accident costs will be shared among those with underlying responsibility (including company management), creditors, equity holders, and those who have benefited from nuclear power use.

(ii) State and Federal statutes and regulations to protect public health and safety will not be violated.

(iii) The States will be required to take all reasonable actions to remove such economic demands on the General Public Utilities Corporation as the windfall portions of gross receipts taxes and purchased power taxes.

(iv) The utility industry and utility industry suppliers will agree to take all reasonable actions to provide technical, financial, and credit assistance to the General Public Utilities Corporation.

(v) The Pennsylvania Public Utility Commission and the New Jersey Board of Public Utilities will be required to encourage the use of energy conservation and efficiency investments to minimize the cost of utility service to consumers and to reduce the need for additional generating capacity.

(vi) Principal creditors of the General Public Utilities Corporation shall agree to provide sufficient notification and other procedures, with respect to debt repayment, considered appropriate by the Secretary. Such procedures shall be designed to allow sufficient time for emergency arrangements to maintain utility service and to protect public health and safety from hazards at such Three Mile Island Unit 2 facilities.

(c) PREMIUM SURCHARGE AGREEMENT.—Payments may be made under this section only if the General Public

Utilities Corporation enters into an enforceable agreement with the Secretary to pay to the Secretary premium surcharges in amounts sufficient to recover 50 per centum of the aggregate amount of the obligations incurred and expenditures made by the Secretary in carrying out subsection (a). The time, amounts, and manner of payments of such premium surcharge shall be established by the Secretary.

ADDITIONAL AUTHORITY OF THE SECRETARY

SEC. 7. The Secretary may—

(1) provide technical assistance to the Commission to expedite the licensing and regulatory procedures of the Commission relating to the remedial actions with respect to the Three Mile Island Unit 2 facilities in Pennsylvania and the restoration of such facilities to service;

(2) provide technical and planning assistance to the Pennsylvania Public Utility Commission, the New Jersey Board of Public Utilities, and the General Public Utilities Corporation to assist in the preparation of the joint regulatory and economic plan required under section 6(b)(2) and may assist in the development of energy conservation, energy efficiency, and load management proposals associated with such plan; and

(3) enter into agreements and financial arrangements with the General Public Utilities Corporation for the purpose of utilizing any data the Secretary determines to be valuable in understanding and enhancing the safety of nuclear powerplants.

STATE LAW CONCERNING LIABILITY; SUBROGATION

SEC. 8. (a) EFFECT ON LIABILITY.—Except as provided in subsection (b), nothing in this Act shall be construed to affect the liability of any person under other applicable law for any damages or other costs for which insurance coverage is provided by the Secretary under this Act.

(b) SUBROGATION.—(1)(A) When any person is liable under other applicable law to the insured licensee for any necessary remedial costs for which payment is made by the Secretary under an insurance policy provided to the licensee under this Act, the Secretary shall be subrogated to all rights, claims, and causes of action of the licensee against such other person with respect to such costs.

(B) Each insurance agreement entered into with the Secretary under the provisions of this Act shall contain a subrogation clause consistent with the terms of this section.

(2) The Secretary shall commence an action against any person liable to the Secretary under subsection (b)(1). Any sums recovered by the Secretary in any such action shall be deposited in the fund.

REGULATIONS

SEC. 9. The Secretary may prescribe such rules and regulations as may be necessary to carry out the provisions of this Act.

The CHAIRMAN. Let me defer at this moment to Senator Simpson, the chairman of the Nuclear Regulatory Subcommittee, of the Environment and Public Works Committee.

STATEMENT OF HON. ALAN K. SIMPSON, A U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Thank you, Mr. Chairman.

I want to commend you on your efforts in this field as well as the field of waste management and the efforts you're taking in these two serious issues.

Well, TMI revisited, I think the former chairman, Gary Hart, who was involved deeply in that when I was a ranking minority member and now there has been a change in there, but I recall so vividly his interest and work as we pursued this issue, and finally now come to, I hope, what we will perceive to be a fruitful result.

I am pleased to join in the hearings on this review of the financial and health and safety issues related to the cleanup, and as the Nuclear Regulation Subcommittee report which Senator Hart and I were deeply involved in, and that report and recovery information clearly noted the recovery process for decontaminating Three Mile Island is a most complex problem involving technical, financial, social, legal, and regulatory issues. And I'm sure the witnesses today will reflect the full range of perspectives on each of those issues.

When we concluded our investigation of the accident as the subcommittee more than a year ago and watched the aftermath, we did conclude of course, the Three Mile Island plant must be decontaminated, although we perceived as you have indicated, no imminent health and safety hazards, we did find that with passing time there is an increasing chance of accidental releases of radioactivity to the environment and the surrounding community and the workers at the plant will continue to be exposed to radiation as long as the plant remains contaminated.

So after 2½ years after the Three Mile Island accident, a great part of the cleanup work including the technically very challenging chore of removing, it remains to be done. So I'm sure that we will hear from the witnesses today, even if the cleanup proceeds promptly on schedule, it will be at least 5 more years before the plant is fully decontaminated.

No one is benefiting from the delay. In fact I believe the only benefits that will ever come to the industry and the public will come by eliminating the impediments of the cleanup and decontamination of TMI plant as soon as possible. Consistent, of course, with the principle mission of the NRC which is to protect the public health, safety, and environment.

And of course the toughest part of the issue is the financial aspect of it, arriving at a fair and equitable distribution of the cost. I have a hunch many of the witnesses can attest that it is proving to be our single-most difficult task. It remains our greatest obstacle. And I want to commend our able colleague, Senator Heinz, who should be commended for his efforts to bring attention to this issue. His bill, S. 1606, has assisted in bringing attention in the need to establish a commitment among the various parties to share in the cost, and I also commend Governor Thornburgh. He and I both had been on board about 2 months when Three Mile Island came along, and I remember that very distinctly.

I enjoyed working with you, sir. You certainly have presented us with a provocative scenario for correcting it and you are to be commended on this partnership we hope we can work among the various parties. And I think the conclusion, it's only fair to say that I would prefer to see a private solution to the financing obstacles that have stood in the way of cleanup. Solutions that would not have depended on a financial contribution by the Federal Government and I still feel that way.

I do believe that the overriding need is now for a solution to the problem and so I won't summarily rule out that Federal participation in any way. And I thank Senator Heinz for focusing our attention on this matter. And Mr. Chairman, I am interested in pushing for the various regulatory issues related to the cleanup to assure that the necessary regulatory approval related to the cleanup will be issued on a timely basis. I think that is very important, consistent with the public health, safety and environment, and I thank you.

The CHAIRMAN. Thank you, Senator Simpson.

Senator Hart?

STATEMENT OF HON. GARY HART, A U.S. SENATOR FROM THE STATE OF COLORADO

Senator HART. Thank you. Like all my colleagues, and like you, I am totally committed to the earliest solution of this very serious problem.

I am one of the veterans of the Three Mile Island accident, along with many others here in this room, and have been deeply involved in the issues raised by that accident since then in the last 2 or 3 years.

I think it is important for us all to realize that whatever solution we work out to this problem will establish a precedent. It has been recently called to my attention by spokesmen for the private industry that we can expect other accidents, if not of this seriousness, at least of this type in the nuclear power industry in the future. It's unrealistic not to expect that.

That is a very sobering observation. Among other things, it means that what we do with regard to Three Mile Island will establish a precedent in connection with those other accidents that may unfortunately occur in the future.

So I think it would be wrong, first of all, to assume that we are dealing here with an isolated incident, and that once it's gone whatever role the Federal Government plays would not be called upon in the future. I think that is unrealistic.

Second, Mr. Chairman, I think it would be wrong to approach this problem outside the context of the fiscal and budgetary and economic problems that this country finds itself in right now in two important regards. First of all, this is an administration which has cast the country in the direction, a rather different direction, from three previous administrations of a so-called free market approach to energy for this country. Now that is a very important concept because if this administration and those who support it believe that we will solve our problems by the so-called free market approach, then if that approach is taken consistently there is no role for the Federal Government in the cleanup of this plant.

Inherent in the concept of a free market is an assumption of risk. You cannot have a free market in energy or any other undertaking, automobile steel, or anything else, without an assumption of risk. And that assumption of risk includes the concept of liability. The concept of liability says for poor performance one must pay. And the one who must pay is the one who performed poorly. If you eliminate that liability from the concept, if you diminish the assumption of risk, then you do not have a free market.

Now we have an administration which has cut back on all other energy supplies. It has said that the Federal Government should not and does not have a role in stimulating the production of other energy supplies. The market should determine that.

On the other hand, it is an administration which says we will subsidize nuclear power, not only at the level that it has been subsidized very heavily in the past, we'll increase that subsidy. What is being proposed here is even an additional subsidy on top of that.

And finally, Mr. Chairman, it comes at a time when we are reducing Federal spending for all elements of human resources. School lunches, job training, and everything else. What is being proposed here, clear and simple, is at the very least $100 million of Federal funds, public resources, to go to the cleanup of this plant. I suspect if we adopt this approach that amount will soar well above $100 million before all this is over.

There is a fundamental principle involved here, Mr. Chairman, and it has to do with the Government doing business for the past number of years. It's an adoption of a Chrysler-type bailout approach to industry in trouble whether by accident or competition or whatever. I believe in partnerships. I believe in partnerships between the Federal Government, States, and private businesses. In this case I think the partnership will probably have to cleanup this plant as a precedent for the future.

I think the partnership must indeed include the corporation involved, GPU, and the ratepayers. I think it has to include the State of Pennsylvania. It has to include other nuclear utilities to evidence an interest in participating. But I also think the partnership has to include the manufacturers and vendors of nuclear powerplants. They are at least as interested in the future of nuclear power as anyone else in this country and I would think it's time for them to step forward and put up some resources to cleanup this plant.

I will wait to hear the testimony of these witnesses, not only the distinguished witnesses before us here today, the Secretary and the Governor, but representatives of the utility and representatives of the industry. I hope we will not focus on the Three Mile Island plant as an isolated detached incident which we solve and then go on as if it doesn't matter to anything else. It matters to all of these budget considerations. It matters to the principles of free marketing energy and it matters to the question of relative priorities of a budget that has been constrained.

Thank you very much.

The CHAIRMAN. Thank you, Senator Hart.

Senator Warner?

Senator **Warner**. Pass.

The **Chairman**. Senator Bradley?

STATEMENT OF HON. BILL BRADLEY, A U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator **Bradley**. Mr. Chairman, I come to this issue in a dual role. One role is a Senator who sits on the Energy Committee and is vitally interested in the whole issue of nuclear power and risk assessment as Senator Hart has described. I also come to this issue as the only Senator who has had his utility bill go up as a result of Three Mile Island. The utility that serves my area happens to be one of the subsidiaries of GPU, so my considerations are not simply those of a Senator looking at the total national group.

The **Chairman**. Senator Bradley, we won't require you to include yourself in the participation.

Senator **Bradley**. I would like to submit for the record the bills that I have received. [Laughter.]

I think that might be instructive.

The **Chairman**. We'll receive them for the record.*

Senator **Bradley**. This is a critical issue. It is a precedent-setting issue and at the same time it is an issue where there is a real crisis. And I think that you can't really separate those two as you look at this problem. And I think Governor Thornburgh has come forward with a very helpful suggestion. I think he has moved it off center.

I think Senator Heinz has included much of what he said in his original proposal in the bill. I'm not certain that everything Senator Heinz has in his bill is absolutely necessary, but I think that the thrust of the proposal made by the Governor is a correct one, that you have to have some sharing here. The dimensions, of course, will be debated and the rationale for those dimensions will be debated in the course of this hearing and our markups.

The point simply being that there is a crisis, that the cleanup costs cannot fall solely on ratepayers. It must also be shared by the nuclear industry and by the Federal Government in my view, and I look forward to working with the committee in trying to resolve that sharing mechanism.

The **Chairman**. Thank you, Senator Bradley.

Senator Wallop?

STATEMENT OF HON. MALCOLM WALLOP, A U.S. SENATOR FROM THE STATE OF WYOMING

Senator **Wallop**. Thank you. I just want to compliment both Senator Heinz and Governor Thornburgh for producing a mechanism by which we can begin to unravel the problems that exist up there. I do think it is wrong to review this as necessarily a precedent setter. The only way we'll make it a precedent is by admitting that we can't do anything but make it a precedent. We don't have to follow ourselves around and around in circles. And complex it is, but complexity is no excuse for not doing anything.

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*The committees subsequently were advised that Senator Bradley did not actually intend to have the utility bills included in the record.

The industry has suffered, the public has suffered. The public has suffered from fear and other things. The consumers have certainly suffered, including Senator Bradley, and I think America has suffered because this vital resource is part of our energy mix. It's standing still in its tracks while the public is uncertain whether we'll ever have it again, whether it will go forward. I have numbers of miners, thousands of miners, that work in my State, in many respects as a direct consequence of the inactivity that followed the event of Three Mile Island.

And I think the Government had a major role in creating the inactivity that has surrounded it by virtue of its inability to make decisions for fear that it would do something that was wrong, and consequently it did nothing and that was wrong.

Again, I think in the instance of comments on the free market, the free market has been distorted by Government's role in this from the beginning. And it continues to be distorted by Government's role. And until we get that distortion straightened out there won't be a free market whether we do or do not do this. So I hope that something comes out of this and I hope that we move forward and that this stale situation that surrounds nuclear energy in America can be relieved.

The **Chairman**. Thank you, Senator Wallop. And I have deliberately passed over Senator Heinz in order that he might kind of encapsulate and summarize as well as lead the discussion with respect to his legislation upon which we are holding hearings today and that he might also appropriately welcome Governor Thornburgh.

STATEMENT OF HON. JOHN HEINZ, A U.S. SENATOR FROM THE STATE OF PENNSYLVANIA

Senator **Heinz**. Mr. Chairman, let me thank you for that opportunity and for your understanding of this problem and for having scheduled with Senator Simpson these hearings, not only on my bill, S. 1606, but on general issues that Governor Thornburgh and others have so effectively raised.

I am deeply indebted to you and members of this committee for having scheduled what I think will be the breakthrough hearings on this issue.

Obviously we didn't get to this point but it is a special privilege and pleasure to have my Governor, Dick Thornburgh, here who has put just uncounted hours and weeks and months trying to get this off dead center, and I think together with Jim Edwards being here representing the administration particularly on the research and development proposal, we have the leverage we need not only to get off dead center, but to get some positive movement.

Let me ask, Mr. Chairman, that my entire statement which is pretty lengthy, be a part of the record, and I'll just briefly summarize a couple of points I would like to make.

The first is that it has been clear for some time that a failure to successfully clean up the damaged reactor at TMI-2 would ultimately pose an unprecedented and unconscionable threat to public health and safety. However, I think it is also fair to say that it has only been during the last year or so that some consensus has developed that Federal legislation is both necessary and desirable, and it was no easy decision. I am not one who believes that the Federal Government should go around bailing out the private enterprise system. I introduced my legislation because I became persuaded of two facts: First, that the cleanup of TMI-2 is simply beyond the financial capability of its owners; and second, that the failure to find a solution will impose still higher costs on the Nation, especially the utility industry.

In my statement I reviewed some of the history of this, what we've done to start cleaning up at Three Mile Island, what utilities have done, what remains to be done there, the need for a solution now and why I believe the solution needs to be a collective one.

I would like just to emphasize the following. Regarding public health and safety, we simply do not have the option which is one we will eventually face in a relatively short time, of halting the cleanup of Three Mile Island. While a lot of progress has been made to date to simply halt that cleanup, will invite real danger to TMI; the Nuclear Regulatory Commission has testified to this, and I'm sure Dr. Pallodino will have some additional words on this. But it has been clearly documented in their environmental impact statement, there is a definite threat here that will get worse as time goes on.

Second, unless we deal now with the larger question of creating an adequate level of property insurance for all nuclear powerplants, we face the prospect of this same kind of financial problem again and again. And then it would become a precedent that other people have talked about such as Senator Wallop and Senator Bradley. Until we have such an insurance plan in place we are not in a position to decide as a nation among the various kinds of energy options we have, whether it's oil or gas or coal or nuclear, because until we have the proper insurance plan, we will not be internalizing or representing one of the true costs of using the nuclear option which, frankly, is the cost of insuring against a problem no matter how remote that problem might be.

Third, I'd like to just say it's my view, the option of just sitting back and letting GPU handle this is not a viable option. A lot of people have studied the consequences of bankruptcy. I know of no responsible person who advocates that as a solution, although in theory that is the kind of solution you advocate when things like this happen. GPU has really done everything, I think, that could be asked of it. It has funded cleanup to date by suspending all common stock dividends, a cost of $200 million, in order to get the necessary short-term loans to provide additional power. It has mortgaged all of its assets. The analysis by financial experts has shown that the bankruptcy would simply increase the litigation costs and the financing costs of cleanup, and would increase the cost of financing for all electric utilities, by causing investors to demand a higher risk premium through utility stocks and bonds and obviously would increase the public health and safety hazard by delaying the cleanup.

There are various studies such as the one done by Rothschild to show that the incident right now is costing the utility industry money, and I think the consensus that is developing is that we need a share approach to this problem. Certainly encompassed in many of the ideals and principles, my Governor, Dick Thornburgh, has advocated in his national cost sharing plan, but I must say that up until today I would have been somewhat pessimistic about any of these plans being successful, because up until today we would not have had a specific on the record commitment from the Federal Government to assist.

Now I am aware we have a letter from Mr. Edwards dated yesterday on what he is testifying to, and I won't go into that. The important part of the Federal Government's commitment here to me is that although we call it an R. & D. commitment, and it is, I believe it is much more far reaching and valuable than simply a research and development commitment. Specifically what the President is committing to do as I understand from Mr. Edwards' letter and what he will testify to, is that the Federal Government will take to their completion regardless of the cost, the difficult and expensive task of removing, processing, and safely disposing of the waste in the containment system and the outer core.

Now there are varying cost estimates on that. One cost estimate in the testimony is $123 million over 3 or 4 years. That might be accurate and might not. It might be more, it might be less. But to me it is immensely significant that President Reagan and Secretary Edwards as a delegate here today, have made an unequivocable commitment to see through to its end this particularly demanding and difficult part of the total cleanup. And from the standpoint of those of us who seek an overall solution to the cleanup and to the question of nuclear insurance for the future, this, it seems to me, gives us the lever or the leverage, depending on how we do it, to put in place a predictable and fully adequate funding mechanism for the other elements. The cleanup and, in other words, the total package that would guarantee the necessary safeguard, the timely cleanup of TMI-2.

So I want to say, Mr. Chairman, I very much welcome and congratulate the President on his initiative that Secretary Edwards announces today. It's extraordinarily constructive and it significantly advances the prospect of the safe and certain cleanup of Three Mile Island. That is something I believe is in the best interest of not only Pennsylvania but of this country and I thank you, Mr. Chairman, for having scheduled this extremely valuable hearing.

[The prepared statement of Senator Heinz follows:]

SENATOR JOHN HEINZ
OPENING STATEMENT ON S. 1606
OCTOBER 20, 1981

Mr. Chairman and fellow members of the Senate Committee on Energy and Natural Resources, and distinguished colleagues from the Senate Committee on Environment and Public Works, let me state at the outset my sincere thanks to Senators McClure and Simpson for holding hearings so promptly on the whole question of cleanup of the Three Mile Island accident site, near Harrisburg, Pennsylvania, and specifically on legislation which I have introduced, S. 1606, to deal with the problem of inadequate insurance for nuclear powerplant property, including the funding available for Three Mile Island (TMI).

It has been clear for some time that a failure to successfully clean up the damaged reactor at TMI-2 would ultimately pose an unprecedented and unconscionable threat to public health and safety. However, it has only been during the last year that some consensus has developed that federal legislation is both necessary and desirable. This was no easy decision. I am not one who believes that the federal government should bail out private enterprise. I introduced my legislation because I became persuaded of two facts: First, that the cleanup of TMI-2 is beyond the financial capacity of its owners; and second, that failure to find a solution will impose still higher costs on the nation, and especially on the utility industry.

I would like to turn now briefly to what has been done already to clean up the Three Mile Island site and what remains to be done there. Then I will review the need for a solution now, why that solution needs to be a collective one, and what my bill proposes.

Since the accident at Three Mile Island on March 29, 1979, there has been some progress in cleanup of the contaminated TMI-2 unit. Krypton has been vented from the containment building and some radioactively contaminated water has been removed from an auxiliary building and successfully treated. We have a completed environmental impact statement, and recently the owner of the plant, General Public Utilities, (GPU) has installed a water treatment system to decontaminate the 700,000 gallons of radioactive water which remain at TMI-2. Cleanup expenditures to date have required approximately $210 million.

But as this effort proceeds, we must face the fact that cleaning up the facility will require another 5 to 9 years, at an estimated total cost of between $900 million and $1.3 billion, and that the original $300 million of insurance is likely to be exhausted next year. It is estimated that what remains of that insurance money, approximately $90 million will be sufficient only for removal and cleanup of the remaining radioactive water. However, there will not be sufficient funds to cover the next essential and very expensive steps in this process: decontamination of the interior surfaces of the reactor containment building, removal and disposal of the damaged core of the reactor vessel, and disposal of various wastes.

I mentioned the public health and safety. We do not have the option of halting the cleanup progress we have made to date, without irresponsibly endangering public health and safety in the area. I believe this has been clearly documented by the Nuclear Regulatory Commission's environmental impact statement, which points out that:

> "Until TMI-2 is largely decontaminated, there is a small probability (which increases with time) of uncontrolled releases of radioactivity to the environment. Decontamination of the plant and disposal of the wastes will eliminate this possibility for potential harm to the public and workers at TMI ... The staff therefore concludes that the full cleanup of the facility must proceed as expeditiously as is reasonably feasible, consistent with ensuring public health and safety and protecting the environment."

And unless we deal now with the larger question of creating an adequate level of property insurance for all nuclear powerplants, we face this same financial problem again if there were to be another major nuclear accident. In addition, until we have such an insurance plan in place, we are not really in a position to decide among the various current options for generating electricity on a large scale -- coal, oil, gas, and nuclear -- since we are not representing one of the true costs of using the nuclear option.

For all of those reasons -- the need to protect the health and safety of the people in the Three Mile Island service area, the need to prevent a recurrence of this financial problem should a future accident occur, and the need to more accurately reflect the true costs of all electricity-generating options--we must proceed expeditiously with both the TMI clean-up and the creation of additional nuclear property insurance for future accidents.

It seems clear to me that both of these tasks will require a collective effort. No single party bears all the responsibility, or has, as a practical matter, the realistic chance of paying for either the clean-up or the insurance for future accidents.

The owner of the utility is in desperate financial shape. Since the accident, both the undamaged TMI unit 1 and the damaged TMI unit 2 have been removed from GPU's rate base, so that the company has had to find another source to cover its fixed costs and interest costs on the $1.1 billion invested in those two units. It has found that funding by suspending all common stock dividends, at a cost of $200 million to its stockholders.

GPU has also had to seek additional funding to provide power to its customers previously served by TMI-1 and TMI-2. In order to get the necessary short-term loans to do so, it has mortgaged all of its assets to a consortium of banks. Financial experts have considered the possibility of bankruptcy as means of solving the problem, but their analysis has shown that bankruptcy would simply increase the litigation costs and financing costs of the clean up; increase the cost of financing for all electric utilities by causing investors to demand a higher risk premium for utility stocks and bonds; and increase the public health and safety hazard by delaying the clean up.

And according to one recent study of the effects on capital costs of the Three Mile Island accident, by L.F. Rothchild, Unterberg, Towbin, there have already been significant increases in financing costs for all utilities, increases attributable to the TMI accident and the slowness of clean up activity to date, with its resultant uncertainties. This study indicates that, based on 1981 debt and equity needs of $16 billion, a risk premium of about .75 percent has already been added to recent utility debt and equity offerings, which means an additional cost of $170 million each year to ratepayers around the country because of uncertainties surrounding TMI. Over the normal 20 years of debt, this would mean an estimated total added expense of $3.4 billion, in absolute dollars, or $1.3 billion in present value, assuming a 12 percent discount. It is worth noting that this added cost of $120 million per year exceeds GAO's estimates of the per year $100-$150 million per year needed to complete the clean up as scheduled, by 1987, or, in other words, that the current costs of doing nothing, costs to the nation's ratepayers as a whole, already exceed the costs of proceeding with the clean up.

The ratepayers of GPU have also been stretched very thin in an effort to solve this problem. GPU's customers served by Three Mile Island have seen their electric bills increase by 50 percent to pay the costs of replacement power, at a time when they were already paying a larger percentage of their incomes for power than ratepayers in many other parts of the country.

During the 27 months which have passed since the accident, these and other difficulties have led to an impasse over funding the clean up costs. Recently several significant steps have been taken which may aid in resolving that impasse:

First. The Edison Electric Institute, an association of utilities companies, have adopted a motion which recognizes that cleaning up TMI-2 is in the best interests of the EEI companies and their customers and that, therefore, the utilities intend to contribute $192 million over six years toward the clean up; and

Second. On July 9, Governor Richard Thornburgh of Pennsylvania outlined a plan for a national sharing of the costs of the clean up.

While both of these steps are helpful, neither provides the mechanism to finally resolve the clean up impasse or to resolve the larger question of adequate nuclear property insurance for utilities. And every day of further delay in resolving these problems increases the risk to the health and safety of the people of Pennsylvania, increases the ultimate cost of clean up, and continues the danger of inadequate coverage for all citizens served by nuclear utilities.

The bill I have introduced will provide a mechanism to resolve both of these problems by providing for a nuclear property damage insurance fund to be administered by the Department of Energy. The fund would be created through a system of insurance premiums to be paid by all electric utilities which own nuclear powerplants, and insurance coverage under this plan would be required as a condition of receiving and maintaining an operating license from the Nuclear Regulatory Commission.

The fund would only be used when clean up and rehabilitation costs from a nuclear accident exceeded the amount of commercially available property insurance by $50 million, up to a maximum of $2 billion. Given the present level of Nuclear Mutual Ltd. (NML) coverage, $450 million, and the anticipated use of American Nuclear Insurers (ANI) coverage to about the same amount by January 1982, that would mean that none of the new funding proposed in my bill would be expended until after the first $500 million of accident costs had been covered by insurance and the affected utility. As private insurance rose, the fund's role would recede. It is worth noting that the fund proposed here would in no way compete with private insurance, since it would float at $50 million about whatever level of coverage was currently available in the private sector and could not be drawn down until "commercially available insurance" were exhausted. And because the cost of the insurance would become a part of the cost of generating electricity by nuclear energy, this bill would provide a further step toward assuring that the price set for nuclear energy more accurately reflects the true costs of using this option, an important consideration as we as a country continue to compare the relative advantages of different ways of generating electric power.

The bill I am introducing today would also provide funds for the clean up of TMI-2 by providing 75 percent of the funding for the uninsured clean up costs incurred after the date of the bill's enactment. GPU would have to repay one-half of any moneys received from the fund, over a period of time to be determined by the DOE. Thus, based on one current cost estimate, the total clean up at TMI-2 would require $900 million. GPU had $300 million of insurance on the unit, leaving a total of $600 million in unfunded costs under this estimate. My bill would cover 75 percent of those unfunded costs, with the remaining $150 million to be provided by GPU. In addition, subject to terms to be set by DOE, GPU would repay 50 percent of that estimated $450 million to the insurance fund over an extended period.

In order to simultaneously build the reserve fund to $750 million and to provide the 75 percent of the total annual TMI clean up funding of about $100-150 million, the bill would require annual premium from the nuclear utility industry totalling $150 million. A total clean up price at $150 million per year, with GPU paying 25 percent immediately and paying half of the rest over an extended period, would bring the effort to completion in five years and the reserve level to $750 million in the eighth year.

In conclusion, Mr. President, there are a number of key facts which we must not forget in considering this situation:

First. Public health and safety continues to be jeopardized at TMI while we prolong the clean up effort;

Second. Energy ratepayers in this Nation will suffer higher electric bills as a result of the reaction of capital markets in some external funding mechanism to provide for the rapid clean up of TMI-2 is not found; and

Third. Every utility which owns a portion of a nuclear powerplant is exposed to serious financial problems, including bankruptcy, and every ratepayer of those utilities is exposed to the threat of skyrocketing electric power costs, as a result of today's grossly inadequate levels of property insurance and the failure of our society to clean up the accident at Three Mile Island.

These problems are national problems, and we must deal with them on a national basis. We have an opportunity to provide assurance to the people of the United States that customers served by utilities with nuclear powerplants will have adequate financial safeguards in case of a nuclear accident, and to resolve the uncertainties surrounding TMI clean up, which affect all utility ratepayers. I applaud the valuable recent initiatives of Governor Thornburgh, the Edison Electric Institute, and the Reagan Administration toward resolving these problems, and I look forward to working with the distinguished group gathered here today to take advantage of the momentum which has developed in recent months, momentum which is a very important factor in bringing the clean up to a safe and speedy conclusion.

The **Chairman.** Thank you very much, Senator Heinz. I again want to underscore the leadership which you have given which has brought us to this point. That is not just idle words, that is fact.

It would be my understanding that Secretary Edwards wishes to make a statement and has other commitments that will not permit him to remain for the hearing. And following him on the panel will be the Honorable Shelby Brewer, the Assistant Secretary for Nuclear Energy, and he is prepared to answer the questions which may be directed with respect to the DOE and administration policy questions.

I make that statement at this time so that people may know that although Secretary Edwards has to leave, Secretary Brewer is prepared to answer fully for the administration with respect to the Department of Energy and the administration.

With that——

Senator **Bradley.** Does that mean that the Secretary will not answer questions?

The **Chairman.** I think we have a very limited and brief period of time and I would let him respond to that for the record. I wish to accord him as much courtesy as we can give him and I understand your concern, but I do understand Secretary Brewer is present and fully prepared to answer all the questions in speaking for Secretary Edwards, but I'll let Secretary Edwards make that comment.

With that we'll recognize Secretary Edwards.

Secretary **Edwards.** I'll be glad to answer any questions that you would submit if you could do it in writing, if you don't mind, because of the full schedule I have immediately following this testimony. But Dr. Brewer will be here to respond to any questions that you may have at this time.

STATEMENT OF HON. JAMES B. EDWARDS, SECRETARY OF ENERGY, DEPARTMENT OF ENERGY

Secretary **Edwards.** Mr. Chairman and members of the committee, I am pleased to respond to your invitation to the Department to appear before you regarding the Three Mile Island cleanup and the appropriate Federal role in that cleanup.

We want to commend Senator Heinz and the sponsor of the legislation similar to the Senate bill 1606 for the efforts to solve the problems of Three Mile Island cleanup and the need for additional property insurance in the unlikely event a major accident occurs again.

The Department believes the prompt and safe cleanup of the Three Mile Island unit two reactor to be one of the highest priority items on the agenda. We applaud the efforts of this committee and Governor Thornburgh in attempting to bring about a rapid and successful conclusion of the cleanup program.

Now, while the Department of Energy's efforts are necessarily and appropriately focused on the research and development aspects of the cleanup, they can and will contribute very substantially to the early and successful resolution of many of the major cleanup problems. I'm proud of the Department's efforts in helping to achieve the cleanup progress made to date and pledge the full support of the Department's technological resources in the remaining phases of the cleanup efforts.

Senate bill 1606 is a bill to establish supplemental property insurance to pay the cost of remedial action following any future damage to nuclear power plants, and to provide additional revenue for cleanup of Three Mile Island.

As you requested in your invitation letter, I will also provide general comments on the financial and safety issues related to the TMI cleanup and the Federal role in that cleanup.

S. 1606 has two basic objectives:

First, to increase the amount of property insurance that would be available to nuclear plant owners in the future in the unlikely event a major accident occurs again.

Second, to establish a mechanism to finance the cleanup of TMI in an expeditious and fair way.

We believe that a rapid resolution of these two problems is vital to this Nation's efforts to solve the Nation's energy problems and thereby to renew economic growth. We believe, however, that it is possible and desirable to achieve both of these objectives on the basis of initiatives already taken. Let me describe these initiatives briefly.

First, in the case of the supplemental property insurance, private efforts are underway to establish more adequate levels of private property insurance. We believe these efforts will be successful making a federally mandated program unnecessary. These private efforts will be described to you by those undertaking them later today. A privately arranged program is much preferred because it avoids the need for establishing staffing, funding, and administering a new Federal insurance program.

The administration would like to see the overall role of the Federal Government reduced and not expanded. Our position on this is consistent with that philosophy. If after a reasonable period of time the private efforts are not successful, then the need for Federal action can be reconsidered.

In the case of financing the cleanup of TMI, we believe that a pragmatic solution accomplishing the same purpose of S. 1606 is already in place. That solution is coming about largely as a result of the interest and efforts of your two committees, the President, the Governor of Pennsylvania, the utility industry, and other parties.

Since the March 28, 1979, accident at TMI, the Department has been deeply involved in providing technical assistance in the recovery from the accident and in conducting research into the causes of the accident to help improve the safety of all nuclear plants. We have spent approximately $12 million on this program to date.

Earlier this year, the President proposed, and the Congress approved, an expanded DOE research and development role at TMI. This expanded program is consistent with Governor Thornburgh's recent proposal for shared responsibility among the various parties. Thus, due to the leadership of the President, the Governor, and the Congress, and consistent with the Omnibus Budget Reconciliation Act of 1981, the Department has initiated a multiyear program of research and development at Three Mile Island.

The program which makes available unique Federal experience and facilities has the following major objectives:

One, obtaining and disseminating R. & D. information on reactor safety of general interest to the Nation's nuclear utilities. This element will also provide GPU with technology of value in conducting the cleanup.

Two, removing, processing, including R. & D., and disposal of abnormal radioactive wastes not disposable at commercial sites.

Three, facilitating removal, inspection, evaluation, and disposition of the damaged reactor core. To the extent needed for R. & D. about 15 percent of the reactor core will be examined at DOE laboratories. Additional portions may also be acquired depending on the nature and extent of damage and the need for special treatment not available at TMI.

Four, costs of handling portions of the waste and damaged reactor core that are not needed for research and development purposes will be reimbursed.

The DOE R. & D. program has already begun and has been accepted well by both GPU and the Commonwealth of Pennsylvania. R. & D. tasks include technical assistance in developing processes for cleaning up the water in the building basement, removal, and examination of abnormal wastes, assistance to local communities and the Commonwealth of Pennsylvania during krypton venting, and development of tooling for early core access and removal. Plans for fiscal year 1982 and beyond include further R. & D. on radioactive waste and core removal examination and disposition. The DOE will acquire all of the abnormal radioactive waste not presently acceptable for commercial disposal for R. & D. purposes; for example, waste extracted from contaminated primary coolant, and has signed an agreement with NRC accordingly.

In summary, we believe the Department program now being conducted and envisioned in the coming years is totally consistent with the principal objective of S. 1606, as well as the spirit of Governor Thornburgh's proposals. Our commitment is to complete the basic R. & D. objectives that we have outlined; namely, to help remove, immobilize, and dispose of abnormal waste; to help in core removal and examination; and to obtain generic safety data. The final cost to achieve these objectives will depend on the extent of core damage.

We call attention to the great importance of early startup of TMI-1 as a source of revenue for cleanup. We are encouraged by efforts by both GPU and the NRC to arrange for early startup, and hope this will be done very early in calendar year 1982.

Mr. Chairman, Dr. Brewer will be happy to answer any questions that you or any members of the committee may have, and I appreciate your letting me present this testimony.

Senator WALLOP. Before you leave, there was a sentence that you omitted in your statement that may have been avertive but I thought while you were here, and the sentence is on page 4 in the last paragraph, "We have not committed to a specific dollar value for the total DOE program nor do we believe it is appropriate to do so."

Does that remain part of your statement?

Secretary EDWARDS. We decided to strike that from my testimony. I'm sorry it wasn't struck from yours.

Senator WALLOP. Okay.

The CHAIRMAN. Is there any objection to excusing Secretary Edwards at this time?

Senator HEINZ. I just want to commend the Secretary for the work he has done on this. It has been a pleasure working with him. I know how much he has to do this week, and this all came about at the end of last week and we are delighted he was able to participate. I know he shoehorned this in and I know of his commitments, and we are delighted to have him here and I wanted to thank him.

The CHAIRMAN. I think it is appropriate and I appreciate his statement. I know how hard the Secretary has to work on this as Governor Thornburgh and many others, but we do appreciate your appearance here this morning and understand your conflict in schedules that makes it necessary for you to leave.

Senator BRADLEY. May I ask one question?

The CHAIRMAN. Certainly.

Senator BRADLEY. In a letter that I received from you today in response to my own letter asking what the Federal Government is prepared to do in cleanup, you have responded that the total will include approximately $75 million including $37 million in fiscal year 1982 to carry out the program approved by the President last spring, as well as a total of $48 million including previously appropriated funds.

Now my question to you is, how much of the $48 million is previously appropriated funds, and how much will be newly appropriated funds?

Secretary EDWARDS. Senator, approximately $12 million has been previously appropriated, so that will leave the difference between $12 million and $48 million.

Senator BRADLEY. So we're looking at roughly a contribution of the Federal Governnent of $120 million.

Secretary EDWARDS. Yes.

The CHAIRMAN. I might just at this point in conjunction with your testimony include that a letter dated October 19 addressed to me from Secretary Edwards, and make that a part of the record at this point.

Secretary EDWARDS. I would appreciate that.

[The prepared statement of Secretary Edwards and the October 19, letter follow:]

STATEMENT OF JAMES B. EDWARDS, SECRETARY OF ENERGY

Mr. Chairman:

I am pleased to respond to your invitation to the Department to appear before you regarding the Three Mile Island cleanup and the appropriate Federal role in that cleanup. We commend Senator Heinz and the sponsors of legislation similar to Senate Bill 1606 for their efforts to solve the problems of Three Mile Island cleanup and the need for additional property insurance in the unlikely event a major accident occurs again.

The Department believes the prompt and safe cleanup of the Three Mile Island Unit 2 reactor to be one of the highest priority items on the Nation's nuclear power agenda, and we applaud the efforts of this Committee and Governor Thornburgh in attempting to bring about a rapid and successful conclusion of the cleanup program. While the Department of Energy's efforts are necessarily and appropriately focused on the research and development aspects of the cleanup, they can, and will, contribute very substantially to the early and successful resolution of many of the major cleanup problems. I am proud of the Department's efforts in helping to achieve the cleanup progress made to date, and pledge the full support of the Department's technological resources in the remaining phases of the cleanup effort.

Senate Bill 1606 is a bill to establish supplemental property insurance to pay the costs of remedial action following any future damage to nuclear power plants, and to provide additional revenue for cleanup of Three Mile Island. As you requested in your invitation letter, I will also provide general comments on the financial and safety issues related to the TMI cleanup, and the Federal role in the cleanup.

Senate Bill 1606 has two basic objectives:

First, to increase the amount of property insurance that would be available to nuclear plant owners in the future in the unlikely event a major accident occurs again.

Second, to establish a mechanism for financing the cleanup of TMI in an expeditious and fair way.

We believe that a rapid resolution of these two problems is vital to this Nation's efforts to solve our energy problems and thereby to foster renewed economic growth.

We believe, however, that it is possible and desirable to achieve both of these objectives on the basis of initiatives already taken. Let me describe these initiatives briefly:

First, in the case of supplemental property insurance, private efforts are under way to establish more adequate levels of private property insurance. We believe these efforts will be successful, making a Federally mandated program unnecessary. These private efforts will be described to you by those undertaking them later today. A privately arranged program is much preferred because it avoids the need for establishing, staffing, funding, and administering a new Federal insurance program. The Administration would like to see the overall role of the Federal Government reduced, and not expanded; our position on this bill is consistent with that philosophy. If, after a reasonable period of time, the private efforts are not successful, then the need for Federal action can be reconsidered.

In the case of financing the cleanup of TMI, we believe that a pragmatic solution, accomplishing the same purpose as S. 1606, is already in place. That solution is coming about largely as a result of the interests and efforts of your two Committees, the President, the Governor of Pennsylvania, the utility industry and other parties.

Since the March 28, 1979, accident at TMI, the Department has been deeply involved in providing technical assistance in the recovery from the accident, and in conducting research into the causes of the accident to help improve the safety of all nuclear plants. We have spent approximately $12 million on this program to date.

Earlier this year, the President proposed, and the Congress approved, an expanded DOE research and development role at TMI. This expanded program is consistent with Governor Thornburgh's recent proposal for shared responsibility among the various parties. Thus, due to the leadership of the President, the Governor and the Congress, and consistent with the Omnibus Budget Reconciliation Act of 1981, the Department has initiated a multi-year program of research and development at Three Mile Island.

The program, which makes available unique Federal experience and facilities, has the following major objectives:

- Obtaining and disseminating R&D information on reactor safety of general interest to the Nation's nuclear utilities. This element will also provide GPU with technology of value in conducting the cleanup.
- Removing, processing (including R&D), and disposal of abnormal radioactive wastes not disposable at commercial sites.
- Facilitating removal, inspection, evaluation, and disposition of the damaged reactor core. To the extent needed for R&D, about 15 percent of the reactor core will be examined at DOE laboratories. Additional portions may also be acquired depending on the nature and extent of damage and the need for special treatment not available at TMI.
- Costs of handling portions of the waste and damaged reactor core that are not needed for research and development purposes will be reimbursed.

The DOE R&D program has already begun and has been accepted well by both GPU and the Commonwealth of Pennsylvania. R&D tasks include technical assistance in developing processes for cleaning up the water in the building basement, removal and examination of abnormal wastes, assistance to local communities and the Commonwealth of Pennsylvania during Krypton venting, and development of tooling for early core access and removal. Plans for FY 82 and beyond include further R&D on radioactive waste and core removal examination and disposition. The DOE will acquire all of the abnormal radioactive waste not presently acceptable for commercial disposal for R&D purposes (for example, waste extracted from contaminated primary coolant), and has signed an agreement with NRC accordingly.

In summary, we believe the Department program now being conducted and envisioned in the coming years is totally consistent with the principal objective of S.1606 as well as the spirit of Governor Thornburgh's proposals. Our commitment is to complete the basic R&D objectives that we have outlined; namely, to help remove, immobilize, and dispose of abnormal waste; to help in core removal and examination; and to obtain generic safety data. The final cost to achieve these objectives will depend on the extent of core damage.

We call attention to the great importance of early startup of TMI-1 as a source of revenue for the cleanup. We are encouraged by efforts by both GPU and the NRC to arrange for early startup, and hope this will be done very early in calendar year 1982.

Mr. Chairman, Dr. Brewer will be happy to answer any questions.

THE SECRETARY OF ENERGY
WASHINGTON, D.C. 20585

OCT 19 1981

Honorable James A. McClure, Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

As a result of recent discussions between the White House and Governor Thornburgh of Pennsylvania, as well as discussions with Senator Heinz and other members of the Pennsylvania congressional delegation, the Administration has undertaken a review of its participation in the clean-up of the damaged unit at the Three Mile Island generating station.

We agree that the clean-up entails a number of useful research and development activities of broad national benefit. In addition, the Federal Government has unique capabilities for ensuring the safe isolation and disposal of certain radioactive waste materials at TMI.

The Federal Government should limit its participation, however, to those activities that are of general benefit or that relate to its unique responsibilities under the Atomic Energy Act of 1954 to ensure safe disposal of nuclear waste. It would not be appropriate for the Federal Government to enter into an open-ended commitment to finance a fixed percentage of clean-up costs or to commit funds without regard to whether those funds were to be used for one of the two legitimate Federal responsibilities identified above.

The President is particularly aware of the need to resolve the apparent impasse that has prevented significant progress in the clean-up of TMI. For this reason, in February of this year he approved a request to the Congress for $37 million for use in a Department of Energy research and development program at TMI in fiscal year 1982. The work that will commence in 1982 is the start of an effort that will continue for the next three to four years. DOE intends to provide technical assistance to clean-up of the water in the building basement; remove and dispose of abnormal wastes not disposable at commercial sites; remove and evaluate the damaged reactor core; and develop special tooling needed for early core access. The DOE program is described in greater detail in the agreements between the Department and the other parties to the clean-up.

We agree that it would be very helpful to have greater certainty concerning the availability of funding for this DOE program in years subsequent to FY 1982. Accordingly, the Administration has assured Governor Thornburgh that the President intends to request from Congress sufficient funds in future years to complete the identified DOE program of research and development at TMI. This will include a total of approximately $75 million (including FY 1982) to carry out the program approved by the President last spring, as well as a total of $48 million (including previously appropriated funds) to complete the activities initiated under the agreement with Electric Power Research Institute (EPRI).

As Governor Thornburgh noted in developing his outline of a plan for the TMI clean-up, the utility industry, the States of New Jersey and Pennsylvania, the owners of TMI, and the Federal Government all share an interest in a resolution of the problem. The responsibility for the financial burdens created by the TMI accident must rest primarily with those who produced and used the electric power from the facility, not the Federal Government. But to the extent that the Federal Government can bring certain unique experience to bear and to the extent that it can support research of benefit to the nation as a whole, it can appropriately participate in the clean-up. At this point, we should all focus our efforts on getting the clean-up completed as expeditiously and safely as possible.

Mr. Edwin Meese, Counsellor to the President, has today conveyed this information to Governor Thornburgh.

Sincerely,

James B. Edwards

James B. Edwards

The CHAIRMAN. Governor Thornburgh, you are more than welcome before this committee. We appreciate your appearance this morning and I would join in the statements that have already been made in knowing of your work. Senator Simpson is not the only one who got a baptism by fire very early in his career, so did you. I think the people of Pennsylvania have noted that, I know some of here have. It's been a very difficult situation and we look forward to hearing your testimony.

STATEMENT OF HON. DICK THORNBURGH, GOVERNOR OF THE STATE OF PENNSYLVANIA

Governor THORNBURGH. Mr. Chairman and members of the committee. As some of you may recall, I last appeared before a Senate inquiry on Three Mile Island more than two years ago. The question before all of us at that time was a very complex, very urgent, and very troublesome one.

Put in its simplest terms, it was our responsibility then to examine what went wrong on and around that infamous piece of Pennsylvania real estate during the ten days of tension that began on the morning of March 28, 1979.

Needless to say now, there was much to be said then on that particular topic, for Three Mile Island represented a test which few of our institutions had been able to meet as well as we might have hoped.

Thanks to the interest demonstrated by Senators Baker, McClure, Simpson, Hart, Heinz, Specter, and others, by members of your staff, by Members of the House of Representatives, by members of the Pennsylvania and New Jersey delegations in particular, by my fellow Governors, by the Department of Energy, the Office of Management and Budget, and by the General Accounting Office, thanks to the sense of responsibility demonstrated last month by the Nation's utility industry, thanks to the support of concerned Americans of many professions and points of view, and thanks to the President for his recent statements of support in this matter, I believe we have begun to write a very different chapter in the history of Three Mile Island.

I believe it can be a chapter of triumph, at last, over those human and institutional frailties that all too often find us divided against ourselves, a chapter that may well be entitled "what went right" in our response to the worst legacy of the worst accident in the history of commercial nuclear power.

That legacy is the continued storage of dangerous levels of radioactive contamination within a facility that was neither intended nor designed for such a purpose—the crippled TMI Reactor Unit 2.

As I said 3 months ago, Mr. Chairman, we faced what I then called a "crisis of commitment" in paying for the timely and total removal of that contamination.

It was clear that the situation out there represents a genuine hazard, not only to those Americans who happen to live within the shadow of Three Mile Island, but also to those who live in the neighboring counties and States which would be vulnerable to the release of radiation into our air and rivers and streams.

It was clear that our efforts to protect the health and safety of all Americans served by nuclear power had been advanced by the lessons already learned at TMI, but that lessons yet to be drawn from that facility could be lost forever, if we failed to act quickly and with foresight.

It was clear that investor confidence in the entire electric utility industry had been badly shaken by this crisis, and by our continued failure to deal with it effectively, and that the subsequent cost of borrowing to meet our national energy needs—a "confidence cost," if you will—would soar if the "last resort" of bankruptcy and emergency Federal action proved to be our ultimate answer to the funding impasse.

It was clear that the confidence cost imposed on all of us by TMI already had begun to raise electric bills from Massachusetts to California, that those costs did not discriminate between nuclear customers and nonnuclear customers, that total federalization of the cleanup would add an enormous national taxpayer burden to an enormous national ratepayer burden, and that our national economic and energy future was being held hostage, in a very real sense, to that radioactive swamp in the middle of the Susquehanna River.

One might normally have expected our established institutions to move swiftly in resolving a problem of such magnitude. But Mr. Chairman, nothing has been normal about Three Mile Island from the very first day it was thrust into the world's vocabulary, and the disturbing impasse over paying for its decontamination merely confirmed the unique nature of the task before us.

While State government had neither the means nor the jurisdiction for effectively resolving such a problem, I felt the time had come for someone to propose a balanced, fair and realistic framework for moving this matter off dead center.

I therefore proposed, on July 9, a comprehensive national cost-sharing approach for raising the estimated $760 million in funds regarded as necessary for the cleanup to proceed.

Under that proposal, 50 percent of the funds would come from national resources and 50 percent from regional resources.

Because their consumers and investors have such an obvious interest in containing the "confidence cost" imposed on them by TMI, I suggested that the national nuclear and utility industries invest $190 million in the cleanup project.

Because the Federal Government has the unique ability to assure the safe disposal of certain types of radioactive waste, and the unique ability to develop certain techniques vital to the cleanup process; because such activity would represent research and development of a broad national benefit; because the Federal Government has played an active role in the development, and a virtually exclusive role in the regulation, of commercial nuclear power; and because the Federal Government would end up paying far more in dollars for far less in research and public protection if this crisis were allowed to drift into a genuine radiation emergency—because of these considerations, I suggested that a Federal investment of $190 million in a safe and timely cleanup also would be appropriate.

Because General Public Utilities, Inc. (GPU), is the party that must assume basic responsibility for the accident, and for the cleanup, I suggested that it be assessed the largest single share of the bill, or $245 million.

And because I believe the very concept of sharing requires a good faith effort from those of us who represent the areas most directly affected, I suggested that the State governments of New Jersey and Pennsylvania invest another $45 million in the operation. The remaining $90 million in estimated costs would be covered, under this approach, by unexpended insurance funds.

All of these investments would be spread over a 6-year period, the amount of time I am told it would take to physically achieve decontamination, even if all funds were immediately available.

Since GPU's shakey financial condition made it clear that the utility cannot raise its share of the cost without productive use of the undamaged unit 1 reactor on TMI, the proposal includes my own conditional support for the restart of that facility.

The conditions are:

That we receive adequate assurances that unit 1 can be operated safely.

And that there first be a clear consensus in place for unit 2 cleanup funding.

Mr. Chairman, I am pleased to report that we seem to be light years closer to achieving such a consensus today than we were last summer, or perhaps even last month. The shared cost approach has been endorsed by a bipartisan committee of the National Governors' Association, and by the full membership of the Republican Governors' Association. It has inspired favorable comment from the entire range of editorial perspective, and from a wide variety of public interest, business, labor and environmental groups.

A major breakthrough in converting this plan into a commitment was achieved at a meeting of the board of directors of Edison Electric Institute (EEI), the trade association representing the Nation's privately-owned utility companies.

On September 10, in Kansas City, EEI pledged to raise $192 million in cleanup funds from the Nation's electric utility industry. I felt that this action would send a clear and positive signal to other parties in this effort, and it appears to have done so.

On October 1, at the White House, I discussed the case for Federal involvement with Presidential Counselor Edwin Meese III, who assured me the matter would receive prompt and active consideration.

On October 9 I received a telephone call from President Reagan who told me that he agrees the cleanup funding problem requires immediate attention, that the cost-sharing approach makes sense, and that a letter soon would be forthcoming from the White House with specifics for Federal action. That letter I received late last night, Mr. Chairman, and with your permission I would like to place it into the record.

The final paragraph contains some reference to my efforts which I don't think are necessarily relevant to this proceeding.

The CHAIRMAN. The entire letter can be placed in the record in full.

Governor THORNBURGH. I would like to hand to you a copy of that letter.

The CHAIRMAN. Thank you. It will be placed in the record in full.

Governor THORNBURGH. Senator Heinz said last week that he feels the perception of our effort has been rapidly changing in this city. "Washington," he said, "has recognized it as a major effort of self-help that deserves some reciprocity."

I hope and believe that is the case, Mr. Chairman. This is not a bailout in any sense of the word, for bailout would imply that we want your help in artificially propping up the future of General Public Utilities Corp. If that were the intent, of course, I would be seeking enough funds not merely to remove the health and safety hazards posed by the current condition of unit 2, but to actually restore that facility for future operation, and to take other steps to improve the company's general financial status.

The plan I have proposed for Federal participation would cover decontamination, nothing more. It is true that GPU faces a variety of other financial problems in the years to come, but those problems quite properly, are matters for its management, its investors and its ratepayers to resolve.

I don't propose to get involved, or to ask you to get involved, in problems that go beyond the clear threat to public health and safety. What I do propose, however, is that we join together now in recognizing that the legacy of radiation on TMI represents a grave national challenge and a rare national opportunity. It is my hope and prayer that our response will indeed be remembered by future generations as an example of something that "went right" in the saga of Three Mile Island. Something called leadership, courage and foresight. For these are the only qualities with which we can assure the American people that the crisis that never had happened before, never will happen again.

Thank you Mr. Chairman and members of the committee.

[The letter from Edwin Meese to Governor Thornburgh follows:]

THE WHITE HOUSE
WASHINGTON

October 19, 1981

Dear Governor Thornburgh:

In response to our meeting of October 1, 1981, as well as discussions with Senator Heinz and other members of the Pennsylvania congressional delegation, the Administration has undertaken a review of its participation in the clean-up of the damaged unit at the Three Mile Island generating station.

We agree that the clean-up entails a number of useful research and development activities of broad national benefit. In addition, the Federal Government has unique capabilities for ensuring the safe isolation and disposal of certain radioactive waste materials at TMI.

The Federal Government should limit its participation, however, to those activities that are of general benefit or that relate to its unique responsibilities under the Atomic Energy Act of 1954 to ensure safe disposal of nuclear waste. It would not be appropriate for the Federal Government to enter into an open-ended commitment to finance a fixed percentage of clean-up costs or to commit funds without regard to whether those funds were to be used for one of the two legitimate Federal responsibilities identified above.

The President is particularly aware of the need to resolve the apparent impasse that has prevented significant progress in the clean-up of TMI. For this reason, in February of this year he approved a request to the Congress for $37 million for use in a Department of Energy research and development program at TMI in fiscal year 1982. The work that will commence in 1982 is the start of an effort that will continue for the next three to four years. DOE intends to provide technical assistance to clean up the water in the building basement; remove and dispose of abnormal wastes not disposable at commercial sites; remove and evaluate the damaged reactor core; develop special tooling needed for early core access; and other appropriate activities consistent with these guidelines. The DOE program is described in greater detail in the agreements between the Department and the other parties to the clean-up.

We agree that it would be very helpful to have greater certainty concerning the availability of funding for this DOE program in years subsequent to FY 1982. Accordingly, I wish to assure you that the President intends to request from Congress sufficient funds in future years to complete the identified DOE program of research and development at TMI. This will include a total of approximately $75 million (including FY 1982) to carry out the program approved by the President last spring, as well as a total of $48 million (including previously appropriated funds) to complete the activities initiated under the agreement with EPRI.

As you noted in developing your outline of a plan for the TMI clean-up, the utility industry, the states of New Jersey and Pennsylvania, the owners of TMI, and the Federal Government all share an interest in a resolution of the problem. The responsibility for the financial burdens created by the TMI accident must rest primarily with those who produced and used the electric power from the facility, not the Federal Government. But to the extent that the Federal Government can bring certain unique experience to bear and to the extent that it can support research of benefit to the nation as a whole, it can appropriately participate in the clean-up. At this point, we should all focus our efforts on getting the clean-up completed as expeditiously and safely as possible.

As the President indicated to you during your recent meetings and telephone conversation, he appreciates your leadership in developing a cost-sharing plan which would break the impasse over the clean up of Three Mile Island. The conditional commitment by the national utilities industry to contribute $190 million to the clean up process is also a result of the active role you have taken in attempting to solve this problem. The President appreciates the opportunity to work with you, the Congress, the industry, and other parties in achieving a resolution to this situation.

Sincerely,

Edwin Meese III

Edwin Meese, III
Counsellor to the President

Honorable Richard L. Thornburgh
Governor
Commonwealth of Pennsylvania
Harrisburgh, Pennsylvania 17120

The CHAIRMAN. Thank you very much, Governor.

Senator Heinz?

Senator HEINZ. Is it your intention to have NRC testify as part of a panel before we question?

The CHAIRMAN. I thought we might ask Governor Thornburgh whatever questions we have at this time, and we might also ask Secretary Shelby Brewer to come up, if there are questions that relate to Secretary Edwards' testimony, and then we'll hear the testimony from the panel and go to the general questions of the panel. But I thought we would relate this block of questions to the testimony of Secretary Edwards and Governor Thornburgh.

Senator HEINZ. First, let me congratulate my good friend Dick Thornburgh on an absolutely magnificent statement. I've complimented you on your work, now I'm complimenting you on your words. It is rare, Mr. Chairman, that they match.

I want to ask the Governor this. In your view, how critical is it that we get in place an overall plan with the predictability of funding for the necessary cleanup of Three Mile Island sufficient to insure public health and safety and how much time do we have to do that?

Governor THORNBURGH. I would be hard-pressed Senator, to provide a quantitative answer to such a question. But clearly the 2 minute warning has long since sounded with regard to the health, safety, and environmental integrity of the damaged reactor. I'm not technically equipped, and those folks who appear later on may be able to give you more of a technical explanation, but I think it stands to reason that a facility that was never designed as a repository for highly volatile radioactive waste that has gone untended in many essential aspects over a 2½-year period, each day becomes more of a potential threat to the health, safety, and environment of the immediate area and those areas that might be affected by a release of those radioactive elements to the environment. So I believe to put it in every day terms, that action is required as soon as possible to insure that the cleanup process will continue and be completed at the earliest possible date.

Senator HEINZ. You have been the prime mover in getting the Edison Electric Institute and its constituent utilities to pledging and come forward with a very significant amount of money, $190 million if my recollection serves me right.

Do you believe that it is at all desirable as provided for in S. 1606 at least in principal, to having a Federal mechanism that if you will lock in that voluntary commitment and if not, what do you suppose are the chances of the utility being able to follow through on what at this point is good faith commitment?

Governor THORNBURGH. Let me say this with respect to S. 1606. As you and I have discussed, I applaud your leadership in setting forth a statutory framework that would indeed make the dilemma that we face today moot in the event, let's hope it's unlikely, of a repetition of the events of Three Mile Island. I think the recognition that under insurance is really what brings us here today and has taken so much of the time of all of those who have contributed to wrestling with this problem.

Under insurance is addressed in a very succinctly and adequately in S. 1606 and either it or its counterpart on a voluntary basis from the industry and I might add from State laws that can mandate certain levels of insurance, will go a long ways toward the repetition of the financial quandary that is faced today.

With regard to the commitment made by the Edison Electric Institute, I have no particular view, Senator, with regard to whether it's preferable to incorporate that into legislation or whether the commitment which I am bound to say I am sure would be honored by those member companies of the institute, can go forward on a voluntary basis.

I believe that the institute and its constituent members have some views on that, but I have no view of my own with respect to how that can best be handled. In my view suffice to say that it was a giant step forward to have that commitment spread on the record without any qualification with regard to other participants.

Senator HEINZ. One of the responsibilities of our State shared in part with the State of New Jersey because of the public utility commission of both States, is to regulate utility industries and the specific companies, GPU being the one that we regulate specifically in Pennsylvania. Is it the State's view that absent a solution to the problem of the cleanup along the lines we've discussed, that it will be financially impossible for GPU to survive over the foreseeable future?

Governor THORNBURGH. I don't know as an administration we have a view in that respect. I know what observers of the financial structure in recent history of GPU have noted with regard to their inability to generate and expend sufficient amounts to bear the entire cost of the cleanup. The General Accounting Office report which was requested by you and other members clearly indicates an inability on the part of GPU to digest the entire cost of cleanup. I believe the observations of the lending banks which make up the 45-member group providing short-term credit to GPU are relevant in this regard, and a similar conclusion was reached there.

I believe that the public utility commission in Pennsylvania for whom I cannot speak and who does not speak for me, has nonetheless indicated that they would be very reluctant to accommodate any requests from General Public Utilities to pass through the entire cost of cleanup if that were to fall on GPU to the ratepayers. So I think a practical answer by way of observation and not by way of any position that I may have personally, is that it would be extremely unlikely that the General Public Utilities company could in the normal course of its business pickup the entire cost of cleanup.

That raises the specter of bankruptcy which as observed this morning is the normal free market response to an inability to deal with obligations that exist in the normal course of doing business. And I believe again a rather general consensus exists that bankruptcy would not be a constructive step with regard to the overall problem of cleanup.

In my view the problem, the principle problem with bankruptcy would be that it would shift the attention from the technical and engineering task at hand, removing the contamination from the reactor in unit 2, to all the financial maneuvering that had to go on with respect to creditors and bondholders and shareholders and other interested parties, and I believe that the focus of the Nation and all of the constituent parties who are interested in this problem must be on speedy, complete decontamination of the facility. And to be diverted into a complex tangle of a bankrupt utility, a bankruptcy which has not occurred since depression days, would not only have an adverse effect on going forward with the task at hand, but would have an untold effect on utility rates across the Nation and the financial structure of our utility industry.

Senator HEINZ. In your plan, you propose quite properly that GPU bear the largest single financial share, $245 million. Obviously you are satisfied that they can afford that much. Do you believe they can afford more? If I don't ask that someone else will.

Governor THORNBURGH. I don't know that I can answer that, Senator. I think what we have attempted to structure as a starting point in a cost-sharing approach are some ballpark figures that seem to us to be fair and equitable in the final analysis. You will have the opportunity to hear from the experts on Metropolitan Edison, GPU's financial structure, and I would not want to anticipate or in any way ineffectually preempt what they might make in the way of observation. I do believe that the $245 million figure in the context of a unit 1 restart under the conditions that I set forth, is something that they can accommodate.

Further, I really can't say without telling you more than I know.

Senator HEINZ. I forgot to ask the chairman if we were under a 5- or 10-minute rule this morning. I'm afraid I don't want to know, either. I think this question can be answered fairly briefly.

You have proposed to commit the States of Pennsylvania and New Jersey together to $45 million. In the case of Pennsylvania, their share of that, would that require legislation?

Governor THORNBURGH. Yes, it would require a normal appropriation process, an amount that we would hope to be able to make available to some entity which would act as a collection base for the funds that have been proposed. In my conversations with the chairman of the Energy Committees in both the House and the Senate and the Commonwealth, I think it is highly unlikely that there would be any reluctance to go forward with that in Pennsylvania if the rest of the pieces fell into place.

Obviously I've discussed with Governor Burn on the plan; Governor Burn obviously is in no position to make a commitment now. Later when the gubernatorial election in New Jersey has been completed I think we can——

Senator HEINZ. He won't be in any position to make that commitment after.

Governor THORNBURGH. I think we can renew those discussions with whomever is in his chair.

Senator HEINZ. I have some questions for the Department of Energy, but I'll reserve those.

The CHAIRMAN. Thank you.

Senator Hart?

Senator HART. Governor, in your proposal you suggest that the industry or the utilities collectively would be prepared to put up as I understand it $190 million. Where does that figure come from, or how was it arrived at?

Governor THORNBURGH. The whole matter of quantifying the figures in the original plan that we submitted, Senator, was based on a rather lengthy process of discussion with all interested parties. Among those persons that we proposed to have contribute to the overall solution. There is no magic to those figures. I would not want to say to you that that balance was struck with any arithmetic certainty. They are ballpark figures that indicate really two things.

One, a qualitative assessment of where responsibility lies, and the desire to fit into a roughly 50-50 configuration between national and regional resources, the amounts that we propose to be assessed.

Senator **Hart**. The reason I ask that is, as I understand it the utilities have said they'll put up $190 million. That is conditional on the Federal Government putting up an equal amount?

Governor **Thornburgh**. No. It's an unconditional commitment. From our point of view, it was suggested as a breakeven.

Senator **Hart**. Excuse me. I thought the Meese letter said it was a conditional commitment.

Governor **Thornburgh**. I'm not sure. I think what Counsel, or Meese means is it's not in hand.

Senator **Hart**. What does that word "conditional" mean?

Governor **Thornburgh**. I can't speak for Mr. Meese. I can only speculate, but the commitment that was forthcoming from EEI was without condition and so stated to me at the time. Now that money is not in hand and it will require action by the boards, I assume, of the various utilities that are members of the institute in order to actually produce the dollar amount. That may be what he meant, but I can only speculate.

Senator **Hart**. What I'm driving at is apparently the Federal Government's proposed share of $190 million is matching to the industries. Yet Secretary Edwards, Mr. Meese and others have suggested that the Federal Government's participation in this should be to finance research. What I'm trying to figure out is the relationship between the research value of cleaning up this plant and $190 million. What if it's only $20 million? In other words, how do we get from value of the Federal taxpayer from the research of cleaning this thing up to $190 million? Is there any relationship at all?

Governor **Thornburgh**. I can't answer that in technical terms. I think Secretary Edwards indicated some of the tasks of the Department of Energy had identified as being a research and development value. Certainly Mr. Meese's letter reiterates that in generic terms. But I cannot answer your question specifically.

From our point of view the $190 million figure was a cut at a fair allocation of the cost. The Department and the administration have chosen to relate that, and I might say understandably to research and development expenditures. And we're talking about two different measurements.

Senator **Hart**. What would happen to your proposal if serious and specific calculations led to the conclusion that the research value of the Federal Government here was $20 million? Would the joint cooperative approach collapse?

Governor **Thornburgh**. I can't speak to the other participants. There would obviously be some hiatus, but my hope is that the commitment by the President through Mr. Meese in his letter to see to the completion of the cleanup process, would come into play in some way that would indicate a commitment to fully participate in a way that perhaps transcended the research and development.

Senator **Hart**. That is not what he says.

Governor **Thornburgh**. I understand. You're positing a situation that we don't have at hand, Senator, and I can only posit a possible response to that. I don't know.

Senator **Hart**. I'm positing a situation we very much have at hand because the Secretary of Energy and the Counsellor to the President said the Federal participation shall be to the extent of the research value to Federal Government. And I'm suggesting that that may well fall short of $190 million, and if it does, what would be the——

Governor **Thornburgh**. I'm sorry. I meant the positing of a $20 million figure with something.

Senator **Hart**. Governor, apparently the only true free enterpriser here in the room today in terms of energy, I want to make clear the result of that is not necessarily bankruptcy of GPU. I suggest that there ought to be a partnership, there ought to be cooperation, and it ought to be properly allocated to those who are involved in producing if you will, the situation we're in.

The industry that we talk about here this morning I take it is the nuclear utility industry.

Governor **Thornburgh**. The EEI participants would be both nuclear and nonnuclear.

Senator **Hart**. Does it include the manufacturers and vendors of nuclear powerplants?

Governor **Thornburgh**. There has been no commitment to my knowledge thus far from that portion. Although in the original proposal that I made, I felt it was appropriate for there to be a contribution from that group. Thus far there has been no such indication.

Senator **Hart**. If one starts from the premise that I do that free enterprise involves an assumption of risk and a concept of liability and recollecting as I'm sure you do that every study and examination of that accident suggested very strongly that the manufacturers and vendors of that equipment were implicated. It seems to me they might be brought into this partnership as well, and maybe even be able to come up with that $190 million that we're willing to assess the Federal Government.

In any case, the General Accounting Office, first of all I take it is still Pennsylvania, PUC's, that the ratepayer should not be assessed the cost of cleaning up this plant, is that correct?

Governor **Thornburgh**. My understanding is, when that was first brought up it was a question of paying the whole cost of cleanup. There has been no expression from the Commission on participation of the ratepayers in funding a part of the cleanup. The Commission, as you know, is only as of yesterday, had a fifth member appointed, and I again would have to beg off speaking for the Commission in that regard. That matter is also in litigation at the present time.

Senator **Hart**. Is it your understanding if the estimated $800 million cost of cleaning up this plant, and I emphasize that because I said 2 years it would cost a billion and it was scoffed at by everybody in the industry, but if the $800 million cost of cleanup was found somewhere, does that include cost of startup? In other words, at the end of $800 million, do we have an operating plant?

Governor THORNBURGH. The figures upon which we have based our estimate of $760 million constitutes bringing the unit 2 reactor to what is technically known as a freely maintained system. It does not put it back in operating order.

Senator HART. Do you know how much that would cost?

Governor THORNBURGH. I do not.

Senator HART. The General Accounting Office estimates that if $150 million annually, if the cleanup costs were annualized to about $150 million and that were to be included in the residential rates beginning in 1980, the rate increases from customers would have been about 15½ percent and for Penn Electric customers, about 6 percent. The General Accounting Office then notes that if that had been done, and I quote, "Even with these increases, customers of several neighboring utilities would have paid a higher kilowatt-hour cost than GPU system customers."

Do you happen to know whether that is accurate?

Governor THORNBURGH. I don't know whether it's accurate or not, but I do know it is somewhat misleading to look just at the kilowatt-hour cost because when you examine those rates in terms of what percentage of disposable income in that particular area, you find a different picture. That is, the percentage of disposable income within the GPU service district that is now devoted to utility payments is much greater than in some of those areas where the absolute rate might be considerably higher.

In other words——

Senator HART. Utilities don't set rates based on estimated disposable income.

Governor THORNBURGH. I am suggesting it is somewhat misleading simply to look at the rate structure without taking into account how it relates to the individual consumer who may pay a lower rate but a greater percentage of his or her disposable income in utility costs.

Senator HART. As far as you know that GAO estimate is not inaccurate?

Governor THORNBURGH. No, I just am not familiar. I wouldn't doubt them at all. But I have seen the figures with regard to further extension into the question of what percentage of disposable income rather than just the flat amount of the rate.

There are some areas of the country where much higher rates are now being paid by consumers without the problem of a TMI cleanup, but in those areas the percentage of disposable income on the average to energy is lower than within the TMI service area.

Senator HART. I think that is an interesting and important piece of information, but it doesn't relate to how utilities set the rates, and apparently GAO's point is GPU and Penn Electric could have passed on the cost of cleanup on the basis that I have suggested, an annualized rate increase, and the customers in that area would have still been paying less per kilowatt-hour than I think half a dozen utilities in the Pennsylvania, New Jersey, New York area.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Simpson?

Senator SIMPSON. Governor, your detailed plan, which I have personally reviewed and found to be most interesting, including back in July when your original thought processes were being developed, the detailed plan is one that allocates the remaining costs in an equal distribution between the national sources as you described them and the State sources as you described them. How essential to you is this cost-sharing concept? In other words, can it be done without that? You probably as chief executive of the State spend more time in that churning around process than any of us here. If this type of cost-sharing plan is not developed, what do you see as the future situation regarding the cleanup? What impact will occur if we do not go to the method you suggest?

Governor THORNBURGH. I believe Senator, the reason we proposed this cost-sharing approach in the first place was an observation. Over 2 years after the accident the cleanup financing was stalled on dead center. This represents one observer's view of how that process can be moved off dead center. I am not prepared to say it is the best or the only way to cope with the situation. It represents what we offered at the time in view of the impasse and the stall in the process as a way to break that impasse. And I'm encouraged that progress has been made in that regard.

If it were to be derailed or abandoned, I don't know what would be forthcoming to replace it. I am terribly concerned about any further delay in the process going forward and I can only eventuate from the lack of funding available to carry out the job. The technology, I am informed, is in place and at hand and I would be extremely troubled if this or any other suitable plan were not to earn early approval by all the interested parties.

Senator SIMPSON. As I indicated in my opening remarks, I would have preferred to pursue other methods of funding. This is a commentary from one of the remaining ragged free enterprisers left on this panel, and I would have preferred not to do that. Not to go to Federal funding.

Let me just ask you the question. Are we at the point where without Federal funding, whether we call it research and development, that is what would have a justification for the Federal expenditures that we're gaining something on a national scene out of research and development and not just cleaning up Three Mile Island, but are we at the point without Federal funding we will have no solution?

Governor THORNBURGH. Let me say first of all I share your views. I would have preferred to have had to present no plan. I would have preferred that the existing institutions could have resolved this within that 2-year period without the Governor of Pennsylvania who has no jurisdiction and no authority on the nuclear industry to have to take any role at all. But I am concerned that if some kind of cost-sharing approach which seems to have developed some momentum is not adopted quickly, that we'll be back to square one where we were in midsummer of this year with nothing on the board with regard to specific commitments to funding the cleanup, and that bothers me from the point of view of the health and safety of the constituents that I represent.

Senator SIMPSON. It bothers me too, because I think we're at the point that I don't know what else is to be done, but I guess I can become convinced only if we see ourselves going into a future plan where we're putting aside money to handle these things in the future. And that is a very important part of Senator Heinz's proposal and yours.

Just another question, even though you don't have a decision in this, but do you support, I understand you do support the restart of the undamaged reactor, TMI-1?

Governor THORNBURGH. I support it on two very express conditions. First of all that we are assured that the restart of unit 1 will post no health and safety hazard in and of itself. I have expressed from the very beginning, from the aftermath of the incident itself to the NRC, some of the specific questions that we had in that regard. And second, I would support the restart of unit 1 only within the context of a contribution being made by General Public Utilities from revenues that would result from that restart in the context of an overall financial plan for completing the cleanup of unit 2. I frankly think that it would be a heavy burden to impose on central Pennsylvania to have pellmell with the restart of unit 1 while the evidence visible to all exists that unit 2, that we have not quite figured out how to deal with the first commercial nuclear accident that we have ever had to face on the Earth.

I would find it very difficult to support a restart of unit 1 without a resolution of the decontamination of unit 2 being firmly in place and the financing being agreed to.

Senator SIMPSON. I understand that. I might say the only known accident on the face of the Earth.

Governor THORNBURGH. Well, none to me, I'll tell you.

Senator SIMPSON. I guess that's where I find my hook to hang on is that if we restart TMI-1 and I believe the figure I was presented with is there is a $14 million cost per month for repurchase of energy to supply the customers, if we get TMI-1 on track that will drop $7 million and we will use that other $7 million to repay the cost and that is an intriguing concept to me. And it's going to be important in my decision.

But one final question. Are you satisfied as chief executive of the progress being made by the electric utilities and by the insurance industry to expand the amount of money available for cleanup of any future nuclear accident? Do you have any further recommendation in that area?

Governor THORNBURGH. No, I'm satisfied that the problem has been identified and initiatives appear to be developing. I do, not see in place yet the final mechanisms to deal with those problems. As I suggested in my comments to Senator Heinz, I believe it is important that this committee and others in the Congress and administration look very carefully at the alternatives that are available to insure that this does not become a recurrent problem, that is the financing of cleanup, if we should happily have to deal with others. We in the Commonwealth of Pennsylvania will from our State's point of view be actively pursuing legislation that mandates certain levels of coverage. The EEI to my understanding is developing its own plan with regard to minimum levels of insurance coverage.

But no, I'm not. At this point today I don't believe that those mechanisms are in place.

Again, a sense of urgency really recommends itself.

Senator **Simpson**. Thank you, Mr. Chairman.

The **Chairman**. Thank you.

Senator Bradley?

Senator **Bradley**. Governor, again let me say how helpful I think you've been to this whole issue in moving it ahead. I'd like to just confirm a few of your own opinions for the record.

Do you believe that public health and safety is threatened by the failure to clean up Three Mile Island in the near term and if so can you describe how in your view?

Governor **Thornburgh**. I do, Senator; in lay terms perhaps I can describe it. We have a facility that contains about 800,000 gallons of radioactive water. We have a damaged core, damaged in unknown configuration within the containment building with high levels of radioactive fissionable materials contained therein. A building that was not designed as a permanent dump. Some of these radioactive materials have an active life of as much as 300 years, and in the case of the core, an infinite life with regard to its potential lethal capacity.

And to me as a lay person, I see each day that proceeds without the application of the technology at hand to clean up that situation, there is an increasing threat to the health and safety of the populace and the integrity of the environment. Can I assess how many days more that situation can remain as it is now? Obviously not. But I can certainly assess that the sooner action is taken to deal with it in a responsible way the better. And that really is a rather simple but I think basic plea that I am making to this committee and to others who I feel have some responsibility to come forward and contribute.

Senator **Bradley**. I think your statement is clear and I think it is also echoed by the GAO in its recent report. It is clearly a threat to public health and safety.

The second point I'd like to——

Governor **Thornburgh**. May I just mention one incident, because I think it indicates a kind of concern at we have near this facility.

On September 11 of this year, there was what is euphemistically labeled as an unusual event at Three Mile Island, and it resulted from the leakage of 500 gallons of contaminated water into the containment building, and it was dealt with ultimately, but I received at home that evening a telephone call from those folks who monitor that situation, and when they told me they had been notified of a "unusual event" at Three Mile Island, I had a very unsettling flashback and I don't want to have any more of those flashbacks, and I don't think the people who live in that area want to be continually concerned about whether what is going on there is an unusual event or something that might be potentially catastrophic.

Senator **Bradley**. The second point I would like to confirm is, is it your view that it would not be possible nor is it advisable to attempt to load all the cost of the cleanup on ratepayers and if so why in your view?

Governor **Thornburgh**. I don't think it would be equitable, Senator, to visit the entire cost of the cleanup on the citizenry which but for accident of geography and human error might have been located anywhere in the country. The nuclear industry in my view and the use of nuclear power by public utilities is unique. I don't want to make the case laboriously, but I think it has already been referred to that its growth was fostered, financed, encouraged and promoted by the Federal Government, that the impact of the TMI incident has not been just on ratepayers in the GPU service area, but the rates have gone up and financing costs have gone up for utilities, nuclear and nonnuclear throughout the Nation. And those national consequences it seems to me recommends that half of the cost in rough terms be picked up by other than those of us who live in an area which is directly impacted by as I say, I can only say it by accident of geography and human error. It could have been elsewhere and could be elsewhere again.

Senator **Bradley**. Let me say I agree with both of those points, and the reason to act now is the public health and safety, use and danger, and you need a cost-sharing mechanism because of the issue's national nature and it has occurred by chance in a particular place at a particular time. That is why I think your cost-sharing approach is very helpful in resolving this issue.

There is one gap that I see, however, and that is in your approach the industry as you confirmed today would come forward with $190 million. The Federal Government $190, GPU $145, insurance $90, Pennsylvania through gross receipts tax $30, and New Jersey through gross receipts tax roughly $15. If whoever is the next Governor agrees.

Now the one gap is today we heard from the Federal Government that they were prepared to do $120 million, not $190 million. So my question to you is where do you think we ought to get the extra $70 million?

Governor **Thornburgh**. I tried to make it clear from the beginning of the presentation of this plan and to reiterate today that I see no particular magic in any figure. It seems to me that we have come a long way since midsummer when zero dollars were available, and I'm confident that the people who are as concerned as all of us here today with the financing of that cleanup can develop a real meaningful consensus out of what has gone thus far. I can't answer that question. I'm really not equipped to put the finger on someone else.

I think I have been gratified that the proposals we've made have received a reasonably favorable reception. We don't know if there is an additional increment needed where it is going to come from.

Senator **Bradley**. I think I heard in your earlier testimony that you had originally felt that some of the vendors should also have some assessment. I wonder if you don't think it reasonable that they might be brought in for part of that cost?

Governor **Thornburgh**. In the original plan and I quote, I said "I am prepared to ask and hereby call upon the utilities, the manufacturers, and the suppliers of the nuclear industry to commit the $190 million." That commitment insofar as manufacturers and suppliers of the industry has not been forthcoming as I stated earlier. On the other hand the $190 million figure has been forthcoming and then some from the utility industry. Where that leads us I don't know. Obviously in a position for all of us who are concerned with this problem have to review the bidding.

I think it is appropriate as I indicated in July, that the manufacturers and suppliers make some contribution to the overall cleanup costs, but how that can be quantified in view of where we are now, I wouldn't want to venture a guess.

Senator **BRADLEY**. I think that is a helpful suggestion.

On the question of passing through the costs that are paid by the utilities themselves for that $190 million pool, is it your best guess that Pennsylvania, say other utilities not GPU would be allowed by PUC to pass through those costs to ratepayers?

Governor **THORNBURGH**. I really wouldn't want to speculate on that. The public utility commission is an independent agency that rightfully, jealously guards its independence. That decision would have to be made first of all by the board of Met Ed as to how they wanted it treated and then they'd have to make appropriate application and in the case of Jersey Central, the same thing in your State.

Senator **BRADLEY**. You don't have any reason to object, or do you, to the Federal Government mandating this passthrough?

Governor **THORNBURGH**. No. As I stated earlier, that is something that I know there are different views upon with respect to which I—as long as $190 million is on the table Senator, how it is treated thereafter is a matter for the management of the utilities, for the public utility commission and indeed as you suggest perhaps for the Congress in terms of legislation.

Senator **BRADLEY**. Let me say, Governor, that I think it has been, we've traveled a long distance since we both started getting panic calls from ratepayers who were only dealing with replacement costs, power costs, and not even cleanup. I think the process of education has begun and I think it has been very helpful. I think we're going to get something out of this. It might not be exactly what you crafted, but it is my view there is some real consensus up here on both sides to do something to clean that mess up, at Three Mile Island. And I think again, you've been instrumental in this and I appreciate your role.

The **CHAIRMAN**. Thank you, Senator Bradley.

I might just announce at this point that we apparently have come to the end of the questioning of the first two witnesses. Senator Heinz is indicating a willingness to hear the panel and conduct the hearing at least until 12:30. It would be our intention then to recess until the hour of 2 o'clock at which time we would resume with whatever is left of that panel and proceed with the rest of the witness list.

Governor, before leaving let me suggest that I was very much intrigued by the question by Senator Hart with respect to the GAO report that showed the capacity of the ratepayers, or had the impact on the ratepayers, because I had felt much the same way. I have been extremely perplexed by the attitude on the part of many, and we'll hear some of them later before we have completed this hearing. But there was a fall on the part of management, and therefore management and shareholders have paid the cost, and if there was a way to see that the management and shareholders paid the cost without having that in any way reflect upon the consumers, the ratepayers of the utilities.

I have never yet figured out how in a regulated utility it is possible to shield the consumers against that cost. It is inevitably there in the long run one way or the other. They either pay it in the rates or they pay it indirectly or the ability of the specific utility to raise money and make investments and powerbuy is so impaired that the cost of doing business is increased and thereby the ratepayer pays in that manner. So I have been perplexed and I particularly appreciated the questions that Senator Hart asked in that regard with reference to the GAO report.

But at the same time I also recognize that there is a nationwide cost to this problem and a nationwide concern that the problem be solved.

Senator Bradley indicated that he alone among Members of the Senate are paying the bill, or he alone among Members of the Senate is a ratepayer to these specific utilities. But it is being reflected coast to coast and I particularly appreciated your statement, Governor, that it is not just in nuclear related utilities that the cost is being paid. We can point to specific gas and electric in the delay that may have been occasioned, certainly was exacerbated as a result of TMI, that the ratepayers out of Pacific Gas & Electric during the period that Diablo Canyon was not operated after it was completed, paid something on the order of $300 million a year in addition to financing costs occasioned by whatever that lack of confidence was.

We are in the Pacific Northwest today looking at the question of what happens if the Washington Public Power Supply System is unable to pay the bills occasioned in the completion of two powerplants that are under construction. What economic impact does that have to the entire region? Not just to the members of the Washington Public Power Supply System or just to the entities that contracted with them, but to every facet and piece of fiber of the social fabric of the Northwest, and I think in a much similar way the utility problems that beset this country compounded and complex as they are, is an issue that we must address and TMI does have an effect upon that. It's not because of it, but it certainly does have a bearing and there is a reason for us to be concerned.

Senator Hart asked the question on what is the research value to the U.S. Government in this question? I think it is safe to say that we have a number of research programs in the nuclear field dealing with nuclear power, reactor safety, and we run a lot of tests. I can think offhand of the power burst facility and the loss of fluid tests and we've invested a lot of money in building those facilities and running those tests. I will not say that this is an experiment we would have run at Three Mile Island because it's the kind of test nobody would have run, but it now does give us the capacity to move beyond those that we would structure, and learn something from this in a manner in which we could never have duplicated in a research activity. And there is something to be learned from this in terms of the cleanup and I think it is worthwhile for us to invest something in that in much the same way. We invest an awful lot of money in nuclear research to structure failure mode operations, and to determine what would happen. Here's one that did happen, we're going to analyze that and I think it's well worth the investment of some Federal money in that, just as we do in a lot of other research and development.

So I would agree with Senator Simpson that I would prefer there be no public moneys involved, no Federal moneys involved in this, and yet there is a very real opportunity here which we should not overlook to utilize the failure mode operation of a test that we simply would not have run but has been run.

I commend you, Governor, for having moved this forward. I think it is obvious that it was foundering on dead center, with everybody afraid to or unwilling to or unable to take the first step. You've done a great job in moving it off of dead center, and again I want to indicate the leadership that Senator Heinz has given it as being essential to move it forward to the point that we are today. And I want to thank you for your appearance and your testimony here today.

Governor THORNBURGH. Thank you.

The CHAIRMAN. And I might indicate those that have been listening to figures, I don't think anybody is locked in to anything at this point. There are no precise shares, no precise figures, and I don't think that they can be demanded at this point. Certainly I don't have any such thing in mind and I believe that is why we are having the hearing, is to find out what the alternatives are, what the values, what the benefits, what the costs may be and then to make a reasonable judgment as to what those figures ought to be and how the burden should be shared.

The important thing, I believe, is the concept of sharing and costs, the concept of a partnership of interests that justifies the investment of some funds by a number of different entities. It has now seemed to be firmly implanted as the mode by which we will proceed, and how that partnership is structured, who the members of the partnership will be, what their contributions will be, is a matter yet to be resolved.

Thank you again.

Senator SIMPSON. Mr. Chairman, I have some questions I would leave to be asked with written responses and I would appreciate those being entered.

The CHAIRMAN. Those questions will be submitted for the record and received for the record and made part of the record when received.

Senator HEINZ [presiding]. Our hearing will continue with a panel. It includes the Chairman of the Nuclear Regulatory Commission, the Commissioner of the NRC, and John Ahearne, also a Commissioner, and Dexter Peach of the General Accounting Office, and I believe that Shelby Brewer, the Assistant Secretary of Energy for Nuclear Energy, will also be joining the panel, although Jim Edwards has in effect given his testimony. But we haven't had a chance to question the DOE representative.

Let me ask if Nunzio Palladino would lead off with his testimony.

We're also delighted that Penn State seems to be doing rather well, a note which some of us, it is almost as important as this issue and it is nice to have somebody who is first in the NRC here along with other firsts.

STATEMENT OF HON. NUNZIO J. PALLADINO, CHAIRMAN, NUCLEAR REGULATORY COMMISSION, ACCOMPANIED BY VICTOR GILINSKY, COMMISSIONER, NUCLEAR REGULATORY COMMISSION; JOHN F. AHEARNE, COMMISSIONER, NUCLEAR REGULATORY COMMISSION; J. DEXTER PEACH, DIRECTOR, ENERGY AND MINERALS DIVISION, GENERAL ACCOUNTING OFFICE; AND DR. SHELBY T. BREWER, ASSISTANT SECRETARY FOR NUCLEAR ENERGY, DEPARTMENT OF ENERGY

Mr. PALLADINO. Thank you very much, Senator, I am pleased to be here and I am pleased also that Penn State has achieved the No. 1 position in football this week. I am also pleased that I am accompanied by two of my colleagues.

I should begin by saying that the Commission's expertise does not lie in the area of utility financing and ratemaking, and that the Commission will therefore not comment on the details of financial measure proposed. Our principle concern is protection of the public health and safety. We support taking prompt steps to overcome the financial problems which are hindering the cleanup of TMI-2 in order to insure that the public health and safety is not threatened.

As we have all become aware, one of the major byproducts of the March 28, 1979, accident at Three Mile Island has been the inability of the TMI licensees to provide the finances to meet the large costs estimated to be necessary to safely decontaminate the TMI-2 reactor. The NRC is very concerned. A prompt resolution to this problem is required to eliminate a potential threat to the health and safety of the public and the environment. The General Public Utilities Corp. and its operating subsidiaries—Metropolitan Edison Co., Pennsylvania Electric Co., and Jersey Central Power and Light Co.—have the legal obligation to cleanup the reactor site. It has become increasingly obvious that GPU does not have adequate financial resources to proceed expeditiously unless a larger source of funds is forthcoming, either through rate increases from its customers or through assistance from outside sources, or a combination of both.

Clearly, the cleanup of TMI is an issue of national concern and Congress is the appropriate forum to consider the conditions under which funds will be provided for the cleanup of TMI-2. Although the Commission takes no position on the specific methods of obtaining funds for TMI-2 cleanup proposed in S. 1606 and other legislation, we welcome the approach encompassed in the proposed legislation as a reasonable mechanism for solving this continuing problem. However, we would like to stress that remaining insurance funds are running out and that the proposed fund specified in section 6 of the bill may not be established in sufficient time to provide adequately for near-term cleanup costs. You may thus wish to consider interim steps to bridge any gap in time before a mechanism such as that provided in the bill is in place.

With respect to the broader issue addressed in the proposed legislation, in the interests of promoting protection of public health and safety and minimizing damages to life or property, the Commission supports the requirement for onsite property damage insurance to provide a substantial source of funds that can be available in a short time to cleanup any future reactor accidents. As you may be aware, the Commission on August 18, 1981, published in the Federal Register a proposed rule that would require power reactor licensees to purchase the maximum amount of onsite property damage insurance available from private sources. Insurance currently available now totals $450 million, although the nuclear insurance pools—American Nuclear Insurers and Mutual Atomic Energy Reinsurance Pool and the electric utilities' own mutual insurance organization, Nuclear Mutual Limited—are attempting to increase aggregate policy limits to narrow the gap between available insurance coverage and potential cleanup expense.

There is a general optimism that about $1 billion can be made available by early next year for property insurance and cleanup through private insurance and utility payment of retrospective premiums. If this amount cannot be established, perhaps because of a reluctance of utilities to pledge the necessary retrospective premiums, the Commission would support a program of mandatory payment of premiums. If necessary, the Commission would seek legislative changes to mandate the availability and purchase of such insurance. It is not certain that private sources of insurance will be available to cover cleanup costs much larger than those arising from the Three Mile Island accident. Consequently, we see the legislation as a means of complementing NRC's proposed rulemaking to afford protection of public health and safety and minimize danger to life or property. Further, Federal legislation may help to speed up the establishment of such a fund.

We have several specific comments on S. 1606. First, the requirement in section 4(b) for shutdown of all operating reactors 180 days after enactment of the bill unless the licensees have paid the first insurance premium is almost certain to cause some shutdowns, in view of the time that would be needed after enactment to get the insurance scheme in place. Until the system is established, licensees and applicants will be unable to meet the requirements of the proposed legislation. A similar problem would exist with respect to the requirement that the premium be paid before a new operating license can be issued. We would propose that the requirement for premium payments be keyed to some period following the date of formal publication by the Secretary of Energy of the premium rates, as required by section 5(a), rather than to the date of enactment of the bill.

Second, section 7 should be expanded to authorize the Secretary of Energy to remove the core and to receive, process, and store those radioactive wastes, including the damaged fuel, from the TMI-2 cleanup that the NRC specifies as unsuitable for disposal in a commercial low-level waste facility. Much can be learned about the safe handling and storage of material from nuclear reactors from an examination of the damaged core and also from processing and solidification of the wastes. These are legitimate research and development tasks for the Department of Energy.

Moreover, if DOE and its contractors were to take responsibility for the core of the damaged reactor, one of the largest elements of technological uncertainty would be removed. Thus, the other parties involved in funding the cleanup need not concentrate on this element.

We support the proposed legislation as a significant step in protecting public health and safety with respect to both cleaning up TMI-2 and the broader issue of future accident cleanup for all licensed reactors.

We note the following as complementary steps to the legislation by involving those parties having a logical interest in and benefit from TMI-2 cleanup:

First, the Electric Power Research Institute (EPRI) research and development support at TMI-2 can act as a channel for funds from utility and reactor manufacturers' who would gain valuable insight into the effects of reactor accidents and the behavior of reactor equipment.

Second, the recent recommendation of the Edison Electric Institute (EEI) in conjunction with Governor Thornburgh's proposal that the electric utility industry provide about $190 million toward cleanup could provide an important increment in cleanup funding that should be encouraged.

While maintaining the basic independence of nuclear regulation mandated by Congress, the Commission intends to support both Federal and State initiatives to expedite the cleanup of TMI-2. We view the conditions persisting at that site since the accident as very serious. Most disturbing is the uncertainty about the availability of resources combined with the increasing potential for hazard to the public as time passes with little progress being made.

Irrespective of the ultimate form that TMI-2 cleanup funding takes, the NRC is prepared to support expeditious actions consistent with insuring public health and safety. Currently, we maintain professional staffs, located at both headquarters and the TMI site, who are dedicated to quick reviews of licensee cleanup proposals. The Commission will insure that this kind of NRC attention to TMI-2 cleanup efforts remains a high priority in this agency throughout the cleanup.

This concludes our testimony. We will be glad to try to answer any questions.

Senator HEINZ. Thank you very much. We'll go through the panel and then come back for questions. It will probably be around 2 o'clock when the rest of the members can come back.

Commissioner Gilinsky?

Mr. GILINSKY. I don't have any additional prepared remarks.

Senator HEINZ. Do you have any comments or statements you would like to make at this point? I know you are very deeply involved with TMI. You were in charge of relationships with many people during the course.

Mr. GILINSKY. We had some interesting conversations, and also we were both up at Three Mile Island not too long ago. We were presenting a proposal. I think it's clear that one of the lessons we've discovered and learned in the wake of this accident is that commercial reactors are badly under-insured. And that is something that we've just got to rectify, and this is an effective step in that direction.

I think we need to set up some scheme of this sort in order to make sure that the reactors are adequately insured.

There is the alternative of private insurance but, at least so far, that hasn't been put together in a definite proposal and it's not clear to me whether it will or not.

It's also important that we note that this bill will help that accident site. It is not a very great danger to the public at this point, but it is a place in which the waste is not in a configuration in which it was intended to be and the waste needs constant attention. It needs continued exposure of workers who go in there, and it really has to be brought into a clean state. I think it's very important to do.

As the chairman pointed out, I don't have a definite view on just how those moneys should be put together.

Senator **Heinz**. Very well.

Mr. Ahearne?

Mr. **Ahearne**. I support what the Chairman said. There is one comment I'd like to make. I think that everybody has to give something. We all have to recognize that every institution, every person associated with this has to be willing to take some criticism for the actions that they're going to take, particularly people in the public eye. I recognize we have to keep to the fundamentals that each of us are responsible for, for example the health and safety for the NRC.

There have been good starts.

Governor Thornburgh's EEI, your own bill and so forth. But there is one item that I think has been relatively skirted and I would like to say I think the ratepayers in the GPU area do have to pay some of that cost. I find it odd to be agreeing with Senator Hart. This is not a mode that I've been in very often in the past.

When you look at the source of funds, you have the taxpayers of the United States, the ratepayers of the United States, investors of the United States, and then the ratepayers and investors of GPU. The Federal Government, we obviously all know, is the agency that transmits from one particular group of those taxpayers through, and without taking exception to any of the proposals of the various allegations, I think it is very important that it be recognized that in order for GPU to come up with its own contribution there has to be a way for the ratepayers of GPU to start putting in moneys into that. And I do note that the orders issued by the Pennsylvania PUC are very clear and they say that none of the costs responding to the TMI incident including repairs, disposal of waste, and decontamination are recoverable from ratepayers. And they go on and say they are not the responsibility of ratepayers. And I do believe at some point that has to be changed.

Senator **Heinz**. Thank you very much.

Mr. Peach?

Mr. **Peach**. Thank you, Mr. Chairman.

I'd like to start off by recognizing first the report that we recently issued to solve the continuing problems of Three Mile Island was done at the request of you, Senator Bradley, and five other concerned Members in those respective States, although the report was issued to Congress as a whole. My statement touches on a number of areas and with your permission I'd like to include the entire statement in the record and proceed to try to summarize and hit some of the high points in light of the discussion that has already occurred here this morning.

Senator HEINZ. Without objection that will be done.

STATEMENT OF J. DEXTER PEACH, DIRECTOR, ENERGY AND MINERALS DIVISION, GENERAL ACCOUNTING OFFICE

Mr. PEACH. With respect to S.1606, our view is this introduction was a useful vehicle for focusing on the two principal concerns surrounding TMI, the need for onsite property damage, increased insurance for nuclear reactors, and the cost of cleaning up the damage of TMI-2 reactor and how to fund that.

We also believe that congressional approval at this point would be premature because of initiatives underway within the private sector to resolve the TMI problems encompassed by the legislation. In our view we felt that Federal involvement should be a last resort activated after it has been clearly demonstrated through the State's electric utilities and insurance industries were unable to resolve the cleanup issue or provide additional insurance coverage. And it's obvious we need it.

At the present time our understanding is that the utility and insurance industries are preparing to expand their present coverage of $450 million to $1 billion. We support this move. The question of the adequacy of a $1 billion insurance policy or a $2 billion insurance coverage is uncertain. In our August 1981 report we recommended that NRC closely follow the insurance issue and determine the level of coverage that is adequate.

In response to a recommendation, NRC noted in its proposal rule which is similar to the provisions of S. 1606 in a required nuclear reactor licensee to obtain the maximum amount of property insurance available as a condition of the operating license. They did not come out, however, on the suggestion that it determine the acceptable level of coverage, and we continually look for such an assessment or at least input to that decision that would have to be made by the Congress. Perhaps it is vital to both industry reactions and congressional deliberations on that issue.

In our report we also supported very strongly a shared approach to funding the cleanup at TMI stating that we believe the primary leadership role in resolving the funding impasse rests with the cognizant State officials in Pennsylvania and New Jersey. Now certainly Governor Thornburgh's proposal is in the spirit of the position that we took in our report. There are a number of questions with respect to funding and how that will occur which I would like to go to in a few minutes.

In the shared approach our view on the Federal role is it should be limited to three areas of activity. NRC using its authority to provide regulatory climates which would expedite the cleanup effort and serve to reduce overall costs. DOE actively pursuing an R. & D. effort, particularly as it relates to resolving the nuclear waste disposal problems of TMI. And the Congress monitoring the cleanup and insurance coverage area and providing appropriate financial support and regulatory authority in NRC and DOE as they need it.

In our testimony covering page 5 through 7, we include information about the estimated cost of cleanup. We show a total unfunded cleanup cost balance according to our calculations of about $570 million. And of course there is an additional amount of insurance funds that are available for expenditure amounting to about $80 million, making about $650 in the range of cleanup activity to take place.

An area that I think needs some further amplification on which there has been some discussion this morning is the area of Department of Energy involvement. I tried to listen closely with respect to the recent letter that was provided to the Governor because it is a letter that I have not seen, but on page 8 and 9 of my testimony we do include details as we understood it of the proposed DOE program existing at that time, and it shows both a component in that program TMI data acquisition and dissemination and expenditures in the range of $80 to $100 million estimated for DOE. And it shows expenditures in the area of DOE research and development estimated expenditures in the range running from $55 up to $95 million for a variety of kinds of activities.

We have heard somewhat different figures here this morning. We've heard the figure of $75 million for DOE research and development program has been mentioned on a number of occasions.

The question I think the committee will need to carefully explore and it has been raised already, is what portion of those research and development expenditures would actually offset expenditures involved in cleaning up the Three Mile Island nuclear powerplant? The figures that I have seen earlier indicate they were about one-third of the expenditures expected to be made by the Federal Government, or the range of $25 million would be in the offset area.

Now perhaps as a result of this recent proposal there was some increase proposed to the kind of activity the Federal Government would undertake of a research and development nature which would in effect be an offset of the cost of cleaning up the plant. But I would need to look at the kinds of activites DOE is proposing and compare that to the kind of information we have in our statement on the activities required to clean up Three Mile Island plant and the most recent information that GPU was provided.

Senator HEINZ. As I understand what you are saying, there is a $570 million unfunded cleanup cost balance, is that correct?

Mr. PEACH. That is correct.

Senator HEINZ. And if the Federal Government should spend in the neighborhood of $123 million, that was the figure that was in both Secretary Edwards' statement. You are saying that that is the equivalent of roughly $41 million of contribution towards the cost of this $570 million cleanup?

Mr. PEACH. I could raise a further question——

Senator HEINZ. Is that what you're saying?

Mr. PEACH. No. Let me try to clarify.

I heard the figure of $123 million this morning. The breakdown was $75 million for research and development and $48 million as I understood it with respect to data acquisition and dissemination program which DOE had started, which had already been funded at the level of about $12 million so far. Now my understanding would be that that acquisition and dissemination activities of making other utilities aware of what has happened in the cleanup area and how this has worked would have nothing to do with offsetting the cost of cleanup. So we're really talking about $75 million of R. & D. expenditures which would relate a portion of which would relate to offsetting the cleaning up of the Three Mile Island nuclear powerplant.

The issue is what portion of that would really be an offset. The figure I had heard earlier related to about one-third, but I will admit to no precision on that figure. I suggest that's something the committee is going to need to shed light on.

Senator HEINZ. Is it fair to say that if one-third is about the right amount, we will hear from DOE on their opinion on that, but it would be your estimation that the actual Federal contribution cleanup would be in the neighborhood of $25 million of the $570 million?

Mr. PEACH. Assuming that $570 million is a firm figure and not something that could go up as problems occur.

Senator HEINZ. I understand.

Mr. PEACH. I wanted to emphasize that because I felt like it was certainly an area the committee was going to need to explore carefully if they went further. Overall I will say that one of our positions in the report was the legitimate role for the Federal Government to use in establishing its position in dealing with the cleanup would relate very clearly toward research and development responsibilities and the benefits that could be gained from these types of activities. That is certainly a clear basis for establishing a Federal role in the area.

There was discussion earlier about the cost of ratepayers. Let me try to enter a little bit of additional information on the record in this area. GPU estimated it would take about $150 million a year expeditiously to go forward with the cleanup efforts. If those total costs were passed to the customers on a per-kilowatt-hour basis, the estimates in our reports show that rates from Penn Electric, Jersey Central customers, would increase about 15.5 percent, 6 percent, and 3.8 percent respectively.

Now with those increases customers of several neighboring utilities would pay a higher kilowatt hour cost than GPU system customers. Adding the cleanup charge to Penn Electric and Jersey Central 1980 actual rates would have made little change in the share of disposable household income spent for electricity by their customers. About one-tenth of 1 percent.

The added costs of Met Ed customers would have increased their share of disposable income to 2.3-tenths of a percent, an amount equal to or below five or six neighboring utilities.

Now I think it's important to recognize it more accurately assessed the effects of the TMI-2 accident on future customer rates. You have to look at other cost elements that would be added to or deleted from customer costs. Your GPU customers have been put in financial straits. The loss of earnings on TMI units and the deletion of certain fixed expenses from rates lended, suspension of shareholder dividend payments because the money was needed to sustain operations, the adverse reactions and suspending of dividends and the uncertainty of cleanup money reduced the company's credit rating to the point where they cannot obtain money from outside sources. To remain financially viable over the long term GPU's earnings level and credibility with investors has to be restored and this will require an additional rate increase for system customers.

Since the completion of our audit work GPU has submitted new rate filings to the Pennsylvania Commission and New Jersey Board. An analysis of the cost elements indicates the net effect of restoring GPU system earning power, restarting TMI-1 and completing the collection of deferred energy charges would be to increase rates an additional 0.56 cents for Met Ed, 0.45 cents for Penn Electric, and 1.0 cents for Jersey Central. These increases were estimated by GPU at 9 percent, 8.6 percent, and 12.6 percent respectively to the companies' current rate levels.

In using these numbers I would use some precaution because they are estimates and they are subject to change, depending on the action of the regulatory commission and also the allocation of costs among various customer classes as a regulatory decision, and the amounts ultimately charged to residential customers in our estimates could change.

Questions have been raised about how much the ratepayers have contributed to date for the maintenance and decontamination of TMI-2. Basically the Regulatory Commissions have not allowed any of the cleanup or other costs to be passed along to customers. Direct cleanup costs amounted to $201.4 million as of July 31 of which $198 million came from insurance proceeds, and $3.4 million in cleanup costs, an additional $43.8 million for operation and maintenance expenses were paid by GPU from stockholders. earnings.

Although no direct contributions have been made the systems customers have had rates increased as a result of the accident because GPU lost over 20 percent of its generating capacity with the units out of service and had to purchase large amounts of electric energy to economically supply the needs of its consumers. They paid a total of $2 million more than they would have had the accident not happened because of the cost of this replacement power.

As to the contributions by the affected parties such as the States, Federal Government, and utility industry, no such contributions have been made to date. The Federal Government has been heavily involved since the accident, but with no direct financial support in the area. The industry has targeted $17.3 million of its 1981 and 1986 research and development budget, that is the utility industry for TMI-2 related matters, and through 1981 Federal agencies have spent a total of $275 million for expenditures which are related in a broad sense to the TMI accident.

Just a brief comment on the advisability of moving ahead with removing the reactor core. While yet we are not certainly experts in that area——

Senator HEINZ. Mr. Peach, there is a statement you skipped over which I'm not sure that we should skip over. I don't know for certain if it's in or out of your statement on page 16 which is you say, "However the insurance money is running out, the GPU has little prospect for obtaining the funding required to complete the project or meet other impending obligations." It seems to me that that is not an insignificant statement. I wanted to know if you could stand by it.

Mr. PEACH. I do stand by it. I do not believe it is an insignificant statement. As a matter of fact I guess if you wanted to be a little on the cynical side you could say that for a long time we've been looking for a solution and now that the insurance money is beginning to run out people are beginning to be a lot more serious about finding a solution.

Senator HEINZ. That is called the prospect of execution currents and trading a man's mind. Please proceed.

Mr. PEACH. Just a quick comment. While certainly we are not expert in this area, in talking with people it was a consensus of officials we contacted that the reactor core should be removed as quickly as possible in order to minimize future problems. While no present danger is known to exist the elements for additional problems do exist at TMI and of course this gets into the health and safety issue which you were discussing earlier.

As to our recommendations for developing mechanisms to finance accidents in other reactors in the future, we believe the most practical method for avoiding financial hardship is to provide an adequate level of property damage insurance coverage so that the recovery cleanup process is not hindered by lack of money. It can be provided by electric utilities, insurance companies, by private insurance companies or by quasi-governmental insurance corporation, or by Federal agencies as a division of S. 1606 or by some combination.

It can be obtained voluntarily or by NRC. Property insurance has always been voluntarily obtained by the companies and obtained by two different carriers. Although all utility companies with nuclear reactors will undoubtedly make arrangements, we believe it would be in the best interest of the public if such coverage were mandatory and possibly made a condition of the utility's operating license. We also believe, to the extent adequate levels of coverage can be provided, private sectors should be encouraged to continue providing property damage insurance coverage. In recognition of potential problems by the insurance carriers of increasing insurance coverage to a level determined to be adequate by NRC, we recommended that NRC closely follow the actions. If they find that the adequate levels cannot be obtained by the private sector, it should suggest to the Congress what Federal action would be appropriate.

One action might be the legislation to require the second layer recoveries by S. 1606 by authorizing NRC to mandate a retrospective premium adjustment in the amount needed to recover accident recovery costs. This could be comparable to current provisions for offsite insurance coverage.

From GPU's experience it is clear that time is money in an accident recovery effort. Long delays and escalating costs although not a direct mechanism to finance future accident recovery, we believe a determined effort by NRC and State Regulatory Commissions to establish a responsive regulatory climate for the utility could reduce the accident recovery time and thereby the cost both to the utility and its customers. Consequently we recommended that NRC develop appropriate guidelines for utility use in preparing cleanup recovery procedures for NRC approval.

We believe if these guidelines are updated to reflect acceptable standards in state of the art technology for decontaminating air and water flows produced by nuclear accident, NRC can respond to the needs of utilities more quickly and adequately protect public health and safety.

Let me close on a final note regarding GPU, with the hurdles it faces in the near future. Several events will soon occur which will have a dramatic effect on GPU as the long term provider of electricity in the service area. These events are closely tied to the rate afforded to the company by State regulators. In our report we noted that we do not believe that bankruptcy is the desired option for dealing with the problems for TMI. We also noted that the rate of return of shareholders and investments in both units have been eliminated, with all dividends and shareholders suspended. Finally, we noted that the company has been operating on short-term borrowings and has over $400 million in long-term debt which comes due between 1981 and 1985. Most of the redemption for this indebtedness occurs between 1983 and 1985. If responsive regulatory actions are not taken the undesirable option of bankruptcy could become a real and serious threat in early 1983 if not before.

Rate relief is clearly needed in order to generate the necessary cash to meet its needs and this rate relief can come only from the State regulatory commissions in Pennsylvania and New Jersey. Fortunately there is sufficient time to take corrective action. The time should be used as advantageously as possible to allow the company to regain its financial help thereby assuring continued power supplies to its customers.

We can't overemphasize the critical importance of State commissions to act in an integral part of this rebuilding process.

Mr. Chairman, there is one other thing that I would add to my statement. It has occurred to me as I have been listening to the testimony this morning, and that would be irrespective of whether or not there is agreement on proceeding with the legislative approach in S. 1606, there are two other areas that Congress will be asked to deal with legislatively, and that will be the question of deciding on a continuing basis on the amount of authorization appropriation necessary for supporting DOE programs that would be involved in the cleanup in dealing with those cost figures. And I think there is the question that you have to examine, perhaps you will hear more later about, about issues related to getting the contributions from the utilities if they are to participate in the activity of cleaning up the Three Mile Island plant. There may be a question that exists without legislative support of that action, what will happen with respect to the variety of State utility commissions that may have to act on including those kinds of costs and rates within their States or what may happen with respect to legal challenges on actions that were taken by the State utility commissions in that area. So I think those are certainly two areas.

[The prepared statement of Mr. Peach follows:]

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C.

FOR RELEASE ON DELIVERY
EXPECTED AT 10:00 A.M.
OCTOBER 20, 1981

STATEMENT OF
J. DEXTER PEACH
DIRECTOR, ENERGY AND MINERALS DIVISION
BEFORE THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
AND THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION
UNITED STATES SENATE

S.1606 addresses two critical issues made evident by the TMI-2 accident which need immediate resolution--the need for increased insurance coverage and cleanup funding. Passage of S.1606 is premature, however, because it requires Federal involvement that is not needed at this time. Several recent proposals to increase insurance coverage to $1 billion and provide cleanup funding need to be given an opportunity to be developed.

Total costs to clean up TMI-2 are estimated at $1.034 billion, with an estimated $570 million unfunded balance expected at the end of 1981. Additional O&M costs of $105 million will also be incurred but this is a matter for State regulators and GPU to settle. DOE is proposing an extensive multi-year R&D effort at TMI-2. We believe this is a worthwhile program, will greatly benefit both the Federal regulatory agencies and the utility industry, and should be accorded full Congressional support.

GPU customers have not been charged with any of the cleanup costs to date. However, customers have had to pay $202 million more than they would have if the accident had not happened because higher-cost replacement energy was required to economically meet System needs. If accident recovery costs of $150 million/year were placed on ratepayers, Met Ed's rates would increase about 1.0 cent/kWh or 15.5 percent more than 1980 rate levels. Rates for Penelec and Jersey Central customers would go up about 0.3 cent/kWh or 6.0 and 3.8 percent, respectively, over 1980 rates.

With few exceptions, all accident cleanup costs to date have been paid from insurance proceeds. No entity other than GPU shareholders has provided any direct financial assistance. Indirect costs to Federal agencies as a result of the accident, however, will total about $275 million by the end of 1981.

We found no reason why the reactor core should not be removed as expeditiously as possible. While posing no immediate safety hazard, the current status of the reactor has the elements for additional safety problems. For economic reasons, early core removal would be advantageous to both GPU and its customers.

The single most important step to adequately finance any future accident recovery effort is to increase the present level of property insurance coverage. While it appears the private sector will be able to achieve this, the responsibility for determining adequate levels of coverage and the best way to do it rests with NRC. An improved regulatory climate at both Federal and State levels could help reduce future costs by reducing the time for cleanup activities.

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Mr. Chairman, we appreciate the opportunity to testify on the financial and operational problems that continue to exist at the Three Mile Island nuclear generating station (TMI), and the parent company of the facility, the General Public Utilities Corporation (GPU). The General Accounting Office (GAO) has had an interest in TMI for quite some time as evidenced by our reports issued on July 7, 1980, 1/ which addressed the serious financial questions raised by the accident, and more recently our report issued on August 26, 1981, 2/ which pointed out the need for a much greater commitment by those affected by TMI to reach a successful resolution of its problems. In addition we have testified before the House Subcommittee on Energy

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1/"Three Mile Island: The Financial Fallout" (EMD-80-89, July 7, 1980).

2/"Greater Commitment Needed to Solve Continuing Problems At Three Mile Island" (EMD-81-106, August 26, 1981).

Conservation and Power on the need to move as expeditiously as possible to cleanup the damaged facility and return its owners to good financial health. We believe the recent initiatives by the Federal Government, the State of Pennsylvania, and the electric utility industry are positive signs of a willingness by the concerned parties to move forward at TMI. We trust this hearing will not only provide additional impetus to increase the commitments we believe are necessary to resolve the dilemma at TMI but that attention can be focused on the need to take appropriate steps to avoid the financial problems faced by GPU if similar accidents occur in the future.

The following are our views on the legislation before this Committee, information on the cost of cleanup and research and development programs at the Island, answers to key questions we were asked to respond to, and our comments on other mechanisms that have been offered to finance this and future accidents.

WHAT ARE GAO'S VIEWS AND COMMENTS ON S.1606?

We believe that the introduction of S.1606 was a useful vehicle for focusing attention on the two principal concerns surrounding TMI--the need for increased on-site property damage insurance for nuclear reactors and how the costs of cleaning up the damaged TMI-2 reactor will be funded. We also believe, however, that Congressional approval of S.1606 would be premature because of the initiatives currently underway within the private sector to resolve both the TMI and the industry problems encompassed by the legislation. In our opinion, the Federal involvement proposed by S.1606 should be a last resort that would be activated only after it has been clearly demonstrated that the States and the electric utility and insurance industries are unable to resolve the cleanup funding issue or provide the additional insurance coverage that is obviously needed.

Let me elaborate a little on the initiatives that are underway as they relate to the two major provisions of S.1606. The proposed legislation would establish a supplemental insurance fund administered by the Secretary of Energy to provide up to $2 billion of insurance coverage above what utilities can obtain in the private sector--in effect, a second-layer of insurance coverage. A minimum of $150 million per year would be collected by the Secretary from the utilities until at least a $750 million reserve had been established.

At the present time, the utility and insurance industries are preparing to expand their present coverage of $450 million to $1 billion. We fully support this move to increase coverage. However, the adequacy of a $1 billion insurance policy--or $2 billion in insurance coverage--is uncertain. Consequently, in our August 26, 1981 report, we recommended that the Nuclear Regulatory Commission (NRC) closely follow the insurance issue and determine what level of coverage is adequate. In response to our recommendation, NRC noted that it has proposed a rule which is similar to the provisions of S.1606, and would require nuclear reactor licensees to obtain the maximum amount of property insurance available as a condition of the operating license. NRC did not comment, however, on our suggestion that it determine the acceptable level of coverage. We continue to believe such as assessment is vital to both industry actions and congressional deliberations on this issue.

S.1606 also provides that the Secretary of Energy shall reimburse GPU for 75 percent of the uninsured reasonable cleanup costs for TMI-2 from insurance premiums collected under Section 5 of the Act and paid into the fund established under Section 3. Fifty percent of this amount would be subject to repayment. The remaining cleanup costs would be shared by other parties with an underlying interest in TMI-2 and beneficiaries of nuclear power.

In our report, we concluded that a shared approach to funding the cleanup at TMI-2 is fundamental. We also concluded, however, that the primary leadership role in resolving the funding impasse rests with the cognizant State officials in Pennsylvania and New Jersey. We stated our belief that these State officials will need the support and cooperation of the utility industry, its regulators, and the appropriate Federal entities--notably NRC and the Department of Energy (DOE). Within the last few months, we have seen a willingness on the part of these parties to collectively address the cleanup issue. On July 9, 1981, the Governor of Pennsylvania proposed a $760 million cost-sharing plan for the cleanup covering the 1982-87 period. DOE has proposed a research and development (R&D) program for TMI-2 of about $75 million with first year funding of $27 million. Working through the Edison Electric Institute (EEI) the utility industry has now indicated a willingness to actively participate in the cleanup at a 6-year cost of $190 million.

If these measures are successful, the Federal role should be limited to three areas of activity. NRC should use its authority to provide a regulatory climate which will expedite the cleanup effort--and thereby serve to reduce overall costs. DOE should actively pursue its R&D effort, particularly as it relates to resolving the nuclear waste disposal problems at TMI. The Congress should continuously monitor the cleanup and insurance coverage areas and provide appropriate financial support and regulatory authority to NRC and DOE as needed. Beyond this, we believe that legislative measures similar to those proposed by S.1606 should be taken only if the private sector cannot provide insurance coverage as determined to be adequate by NRC or if industry participation in sharing cleanup costs will require a Congressional mandate. Even if this step becomes necessary, we believe that maximum use should be made of private institutional facilities wherever possible to accomplish the objectives of this legislation.

WHAT ARE THE ESTIMATED COSTS OF DECONTAMINATING THE DAMAGED TMI-2 REACTOR?

In our August 26, 1981 report, we included an April 1981 estimate of $701.4 million to cover the TMI-2 cleanup costs during the period 1981-87. No operations and maintenance (O&M) costs were included. As of December 31, 1980, about $130 million in unexpended insurance proceeds remained to be applied against future cleanup costs leaving an uninsured cleanup cost balance of about $570 million.

Since our report was issued, we obtained a revised cleanup cost estimate prepared by GPU and its project contractor, the Bechtel Corporation. This latest estimate, which revises the previous approach to reaching and extracting the damaged nuclear fuel core, anticipates that approximately $654 million--exclusive of O&M costs--will be needed during the 1982-87 period to complete the cleanup. Approximately $84 million in insurance proceeds are expected to remain at the end of 1981, still leaving an uninsured cleanup cost balance of about $570 million. This estimate is comparable to the $760 million estimate included in the cost-sharing plan proposed by the Governor of Pennsylvania in July since the Governor's estimate includes $105 million in O&M costs for the cleanup period plus the remaining insurance proceeds, neither of which is included in the $570 million estimate. Because O&M costs are a normal cost of doing business and are not attributable to the accident, we do not believe they should be aggregated with cleanup costs but should be considered separately for funding purposes.

GPU/Bechtel cleanup schedule

The cleanup effort has been organized by GPU and its contractor into three general phases, with numerous tasks to be completed in each phase. Due to the nature of the work, there will be some overlap between the various phases of the cleanup. The following schedule outlines the three phases of the cleanup, the major tasks to be performed in each phase, the estimated total cost for the project, and a reconciliation of the unfunded balance.

Schedule of Proposed Cleanup Activities at TMI-2 and Estimated Costs

		Estimated cost (millions)
Phase I - Complete auxiliary building cleanup and initiate containment cleanup		
Major Activities: Operate EPICOR II Clean up reactor coolant water Complete cleanup for auxiliary building systems Initiate containment building cleanup		
Total estimated costs		$ 551
Phase II - Decontamination of the containment building		
Major Activities: Perform various entries into containment building Develop support systems for decontamination Perform gross manual decontamination on various elevation levels Operate the Submerged Demineralizer System to remove high-level radiation Reduce volume of captured radiation		
Total estimated costs		329
Phase III - Remove the fuel core, cleanup the coolant system, and perform radiation storage functions		
Major Activities: Construct reactor vessel mock-up for training Refurbrish polar crane Disconnect control rod drive mechanism Remove plenum chamber Perform core inspection Remove damaged fuel		
Total estimated costs		154
Total estimated cost for decontamination and fuel removal		$1,034
Less:		
Costs incurred (1979-81)	-$275	
Estimated O&M expense (1982-87)	- 105	
Remaining insurance proceeds (as of 12/31/81)	- 84	464
Total unfunded cleanup cost balance		$ 570

The DOE Involvement

DOE has been actively involved at TMI since 1979 when it began to collect and disseminate data on the effects of the accident. In 1980, DOE joined with GPU, NRC, and the Electric Power Research Institute (EPRI) in a program to coordinate the collection and exchange of information on the technical aspects of the accident. Limited information has been obtained on how the accident affected reactor and containment building equipment, the distribution of radioactivity, and the treatment and elimination of radioactive wastes. DOE anticipates that this program will provide useful scientific information for the rest of the electric utility industry and under the present cleanup schedule will be active for about 8-10 years at an annual cost of $10 million. If the cleanup is accomplished sooner, these program costs could be reduced. Appropriations for DOE's involvement amounted to a total of $10.5 million for fiscal years 1980 and 1981 with $10 million requested for fiscal year 1982.

A R&D program has also been proposed by DOE which could possibly cost $75 million over a 3-year period. The basic objectives of the program would be to gain quick access to the damaged core, remove it, and demonstrate the feasibilty of various techniques for immobilizing the captured radioactive wastes. It is possible that, as a result of this effort, NRC would modify some of its requirements relating to the safety of nuclear powerplant operations.

DOE's proposed data acquisition/dissemination and R&D involvement at TMI is shown in the following schedule. Because of the potential for overlap of the R&D tasks, DOE is projecting a range of costs for each of the two major activities rather than discrete costs.

MAJOR ELEMENTS OF DOE ACTIVITIES AT TMI

Activity	Estimated cost range (In millions)
TMI Data Acquisition and Dissemination:	$ 80-100
Inspection of instrumentation and electrical components	
Radiation, environmental and waste technology	
Offsite fuel debris examination	
Establish archives--disseminate data	
Program management	
DOE Research and Development:	
In situ reactor core examination	$ 45-65
Early core damage examination	
Head and plenum inspection	
Core and debris removal and inspection	
Waste Immobilization Research	$ 10-30
Process development and scale-up	
Equipping existing hot cell with handling, vitrification and environmental control equipment	
Shipping, immobilization, and detailed examination of immobilized products	
Total DOE R&D Program Estimate	$135-195

The R&D is a "hands on" effort where DOE will be actively involved in studying methods and procedures for quickly extracting the damaged fuel and analyzing its condition as a result of the accident. Several activities will be performed in this phase of the project including (1) decontamination experiments in various containment building locations such as the reactor head and polar crane, (2) remove and study some of the radioactive wastes that have already been captured and immobilized, (3) work with contractors to develop the tooling and training required to inspect and remove the reactor core, and (4) perform analyses of the effects of the accident on the core and other reactor components.

We believe the proposed DOE activities are worthwhile, especially given the heavy involvement of the Federal Government in the initiation and promotion of past nuclear programs. In our August report, we recommended that DOE prepare a multi-year budget proposal for Federal participation at TMI which would recognize the leadership role of the States in resolving TMI's problems. We also recommended that the DOE proposal clearly specify the objectives to be achieved by Federal participation, the work steps for each fiscal year, the application of the program results, and the total funding needed to successfully carry out the program. DOE officials responded to our recommendation by stating they do not believe it is necessary to seek multi-year funding support because the normal annual review and Congressional authorization process will assure the program's consistency with DOE's objectives and the needs of the cleanup. We disagree. We believe a total commitment of the Federal sector is important in eliciting the support of other interested parties for the cleanup effort.

WHAT WILL BE THE COST TO THE RATEPAYERS IF THEY PAY FOR THE ENTIRE DECONTAMINATION PROCESS?

GPU has estimated that it will take about $150 million a year to expeditiously move forward with the cleanup effort. The effects of passing this full cost on to customers of the GPU companies will vary depending on the share of TMI ownership, the effect of State revenue taxes, and the allocation of the cleanup costs among the various customer classes. If the $150 million cost were passed through to customers on a per kilowatt hour (kWh) basis, Metropolitan Edison (Met Ed) residential customers would have their rates increased by 1.0 cent per kWh and residential customer rates for Pennsylvania Electric Company (Penelec) and New Jersey Central Power and Light Company (Jersey Central) would increase by 0.3 cent and 0.25 cent per kWh, respectively.

To better illustrate the potential effect on residential customers, we estimated what the average residential rates would have been in 1980 if the $150 million cleanup cost had been allowed and what effect the increase would have had on the percent of net disposal household income used for electric energy expenses. Based on the per kWh increases identified in the previous paragraph, rates for Met Ed, Penelec, and Jersey Central customers would have increased by 15.5 percent, 6 percent, and 3.8 percent respectively. Even with these increases, however, customers of several neighboring utilities would have paid a higher kWh cost than GPU System customers.

Adding a cleanup charge to Penelec's and Jersey Central's 1980 actual rates would have made little change in the share of disposable household income spent for electricity by their customers--about 0.1 percent. The added cost for Met Ed customers, however, would have increased their share of disposal income to 2.3 percent--an amount equal to or below five of 16 neighoring utilities in Pennsylvania, New Jersey and New York.

To more accurately assess the effects of the TMI-2 accident on future customer rates, it is necessary to consider other cost elements that will be added to, or deleted from, customer costs. The GPU companies have been placed in dire financial straits, largely as a result of past regulatory commission actions. The loss of earnings on the TMI units and the deletion of certain fixed expenses from the rates led to the suspension of shareholder dividend payments because the money was needed to sustain operations. The adverse rate actions, the suspension of dividends, and the uncertainty of cleanup funding reduced the companies' credit rating to the point where they can not obtain money from outside sources. To remain financially viable over the long-term, GPU's earnings level and credibility with investors has to be restored and this will require additional rate increases for System customers.

In our report, we estimated that if the TMI capital and operating costs had been allowed in the companies' base rates, residential customer rates actually charged in 1980 would have increased by 0.9 cent for Met Ed and 0.3 cent each for Penelec and Jersey Central. We also pointed out, however, that there are a number of factors pending which will affect future rate levels. Among these factors are the TMI-1 restart which will reduce replacement energy costs and the expiration of the present deferred energy surcharge.

Since the completion of our audit work, GPU has submitted new rate filings to the Pennsylvania commission and the New Jersey board. An analysis of the cost elements in the filings indicates that the net effect of restoring the GPU System's earning power, restarting TMI-1, and completing the collection of deferred energy charges would be to increase rates an additional 0.56 cent for Met Ed, 0.45 cent for Penelec, and 1.07 cents for Jersey Central. These increases were estimated by GPU to add 9.0, 8.6, and 12.6 percent, respectively, to the companies' current rate levels.

Some precautions in using these numbers must be noted. The numbers presented are estimates only and subject to change depending on regulatory decisions. If, for example, the regulatory agencies only allow $100 million in decontamination costs to be charged to rates, the rate increases postulated earlier for this cost element would be reduced by one-third. Likewise, if not all of the companies' requested costs for restarting TMI-1 are allowed in the base rates, the differential between estimated replacement energy costs in 1982 and TMI-1 generation costs will increase and the added savings could serve to reduce rates even more. In addition, the estimated costs are computed as an average rate per kWh. The allocation of these costs among the various customer classes is a regulatory decision and the amounts charged to residential customers in our estimates could change.

HOW MUCH HAVE THE RATEPAYERS CONTRIBUTED TO DATE FOR THE MAINTENANCE AND DECONTAMINATION OF TMI-2?

To date the regulatory commissions in Pennsylvania and New Jersey have not allowed any of the cleanup or other costs associated with TMI-2 to be passed on to consumers. As of July 31, 1981, direct cleanup costs amounted to $201.4 million of which $198 million was covered by insurance proceeds. The remaining $3.4 million in cleanup costs and an additional $43.8 million for O&M expenses at TMI-2 have been paid by GPU from stockholders' earnings.

Although no direct contributions have been made, GPU System customers have had their rates increased as a result of the accident. GPU lost over 20 percent of its generating capacity with TMI-1 & 2 out of service and had to purchase large amounts of electric energy to economically supply the needs of its consumers. Through June 1981, these energy purchases amounted to $605 million. By regulatory commission orders, these replacement energy costs have been passed on to System customers. The GPU companies had collected about $528 million of the $605 million spent for replacement energy with the balance deferred for later collection. However, about $326 million of this amount were TMI-related costs that would normally have been collected but had been deleted from the rates by regulatory commission orders. Consequently, as of June 30, 1981, GPU System customers had paid a total of $202 million more than they would have had the accident not happened. The following table shows how the replacement energy costs have been distributed.

DISTRIBUTION OF GPU S
REPLACEMENT ENERGY COSTS
April 1979-June 1981

Company	Net consumer costs (in millions)
Jersey Central	$103
Met Ed	87
Penelec	12
Total net replacement energy costs	$202

The need to replace the relatively lower-cost nuclear energy from the TMI units with the higher-cost energy purchases increased GPU System customer costs at a faster rate than rate increases experienced by neighboring utilities. During the 1979-80 period, GPU System rates increased at a rate of 14.5 percent while non-GPU companies had an annual increase of 11.64 percent. This was in contrast to earlier years when GPU rate increases were lower than those for other companies.

HOW MUCH HAVE THE OTHER AFFECTED PARTIES SUCH AS THE STATES, THE FEDERAL GOVERNMENT, AND THE UTILITY INDUSTRY CONTRIBUTED TO THE TMI CLEANUP?

Several affected parties such as the States of Pennsylvania and New Jersey and the electric utility industry have had the opportunity to contribute financially to the cleanup costs but no such contributions have been made to date. The Federal Government has been heavily involved at TMI since the accident but no direct financial support for cleanup activities has been provided. However, the industry has targeted $17.3 million of its 1981-86 research and development budget for TMI-2 related matters and through 1981, Federal agencies have spent or budgeted a total of $275 million for accident-related expenditures.

The lack of direct financial support may be due, in part, to the fact that TMI-2 was insured for $300 million and the insurance proceeds have been used to cover accident recovery costs to date. However, the insurance money is running out, the GPU has little prospect for obtaining the funding required to complete the project or meet other impending obligations.

The States

The States of Pennsylvania and New Jersey have made no direct contribution towards funding the TMI-2 cleanup costs. Beyond rate actions by the Pennsylvania public utility commission and the New Jersey public utility board that have barely kept the GPU companies solvent, State officials until recently, have done little to resolve the dilemma at TMI. On July 9, 1981, Governor Richard Thornburgh of Pennsylvania proposed a comprehensive cost-sharing plan for dealing with the TMI cleanup. The proposal was the product of discussions with representatives of the nuclear industry, Congressional and Administration officials, members of the financial community, private citizens, the State of New Jersey, and other relevant State and local groups. The Governor's proposal would share the cleanup costs of TMI on a 50/50 basis, with the burden spread evenly among national and local resources. While not mandating specific actions to be taken by each party, the proposal clearly outlined what should be done in order to enhance the prospects of funding the cleanup. Among the amounts proposed was a $5 million annual commitment by Pennsylvania and a $2.5 million annual commitment by New Jersey.

We believe the Governor's proposal is a good first step toward the cleanup, and is evidence of the type of commitments we envisioned in our report. We hope that the momentum generated by the proposal will continue so that the cleanup at TMI can proceed expeditiously.

The Federal Government

The Federal Government has put no money directly into the cleanup effort, but like the GPU System consumer, has incurred considerable indirect costs in response to, and as a result of, the accident. The involvement of several sectors of the Federal Government has been fairly visible, with five primary Federal agencies spending about $142.9 million during 1979 and 1980 in direct response to the accident. As might be expected, NRC had the largest involvement at a cost of $131.5 million for activities such as inspection and enforcement, standards development, and regulatory research. DOE spent $7.6 million for various support services including providing radiological assistance teams, and atmospheric release advice. The Environmental Protection Agency (EPA) spent $3.7 million, mostly for off-site monitoring efforts, the establishment of a field office in Middletown, Pennsylvania, and other related support functions. Two other agencies, the Federal Emergency Management Agency and the Federal Energy Regulatory Commission spent $47,710 and $14,000, respectively. Our best judgement is that only about $26 million of this total amount can be considered directly related to the emergency, with the remaining classified as non-emergency response.

The agencies have estimated that 1981 expenditures will total about $132.3 million, again led by NRC at $118.8 million for expanded research related to reactor regulation, as well as a continuation of many of the efforts that were initiated by the accident. DOE and EPA are the only other Federal agencies with major estimates for 1981, with $6.5 million and $6.9 million respectively. The total actual and estimated Federal expenditures resulting from the accident through 1981, therefore, is $275.2 million. A more detailed breakdown of these costs is provided in Appendix I.

The electric utility industry

The electric utility industry, like the other parties with a strong interest in the TMI-2 cleanup effort, has made no financial contribution for accomplishing that effort. However, in a recent meeting of utility executives, the industry endorsed Governor Thornburgh's proposal which included an annual industry contribution of $31.7 million for 6 years. We are also aware that EPRI has recently increased its nuclear research budget relating to TMI. This proposed 5-year $17.3 million program will not provide direct cleanup funding, but is designed to obtain generic information about the accident and recovery effort and make it available throughout the electric utility industry.

We believe that an aggressive industry role in the cleanup can produce long-term benefits which would flow throughout the industry and its customers. For example, through participation in the cleanup, the utility industry may have the opportunity to assist in the development of more precise and effective regulatory programs which could be applied to future accidents should they occur. Such programs should help reduce the accident recovery time and cost for utilities. The utilities could also contribute personnel to assist in the decontamination process. Utility workers from throughout the country could receive training which could be used as a foundation to develop more effective procedures for working in high-radiation areas in other accidents or for eventual decontamination of retired nuclear generating plants at other locations. From the direct knowledge obtained from the TMI cleanup program, accident recovery timeframes should be reduced which would benefit customers who would have to rely on expensive purchased power for a shorter period of time in the event of an accident at another utility.

One major hurdle exists, however, which could preclude industry participation in the TMI cleanup. EEI officials believe that State utility commissions responsible for the actions of the contributing utilities will be reluctant to allow them to voluntarily expend financial and personnel resources to assist GPU at the expense of their customers. Shareholders of the utilities may also object to their utility making a contribution from its earnings. It is fairly evident, therefore, that many thought-provoking questions and issues will have to be resolved before a major commitment by the electric utility industry can be made.

IS IT ADVISABLE TO REMOVE THE REACTOR CORE?

It was the concensus of officials that we contacted as part of gathering information for our recent report that the reactor core should be removed as quickly as prudently possible in order to minimize potential future problems. While no present danger exists, the elements for additional problems do exist at TMI, and these should be removed and isolated so that additional problems do not have a chance to occur. It was also pointed out that although the cleanup at TMI will not require new technology, the application of existing technology on a scale that has never been experienced is a factor that will be explored at TMI.

The accident created its own unique set of unknowns, particularly as to what happened to the nuclear fuel core and the reactor vessel itself. Some new techniques for inspecting and handling the core in its damaged condition will undoubtedly be required. Work is already underway to design and construct some of the specialized equipment needed.

We do not see the core removal process as a health and safety hazard. From a public safety standpoint, the reactor containment building did what it was designed for--it contained the radiation resulting from the accident and limited its dispersion to the outside environment. From personal observations and the amount of effort and expense allocated to radiation protection measures during the proposed cleanup effort, we believe that appropriate precautionary measures will be taken to protect the health and safety of workers during the core access and removal process. Present plans call for DOE to transport the core off the island once it is removed from the reactor vessel, thereby eliminating the use of the island as a nuclear waste repository.

NRC regulations will apply to each phase of the core removal process. Normal fuel handling and storage procedures are well established, but the uncertain condition of the core at TMI-2 may well require the application of different procedures. Each of these procedures will require NRC approval, but with the on-site staff available, NRC sees no problem with ascertaining that all applicable regulations are adhered to. Removing the core could greatly benefit NRC and the utility industry by increasing their knowledge of what happened and what regulatory actions need to be taken to improve safety conditions at nuclear reactors. Leaving the core in place would continue the uncertainties surrounding the accident and this could lead to either under-or over-regulation by NRC.

From an economic standpoint, it is imperative that GPU remove the core as soon as practicable. Once the containment water is processed, the fuel core remains as the major source of additional radiation. As long as the core remains in the reactor vessel, continuous monitoring, surveillance, and maintenance is required. Furthermore, no final decisions will be made on the future of the reactor unit until the core is out, the coolant system is decontaminated, and the reactor vessel and steam generators can be closely examined and tested. Until a decision is made on the future of the unit, GPU will continue to have difficulty in securing external financing and future System reliabiilty and customer service could be jeopardized.

DOES GAO HAVE ANY RECOMMENDATIONS FOR DEVELOPING MECHANISMS TO FINANCE ACCIDENTS AT OTHER REACTORS IN THE FUTURE?

We believe that the most practical method for avoiding the financial hardship resulting from a major nuclear accident is to provide an adequate level of property damage insurance coverage so that the recovery/cleanup process is not hindered by the lack of money. This insurance coverage can be provided by an electric utility mutual insurance company, by private insurance carriers, by a quasi-Governmental insurance corporation, by a Federal agency--as envisioned in S.1606--or by a combination of these. The coverage can either be obtained voluntarily or it can be required by NRC.

Property insurance coverage has always been voluntarily obtained by utility companies and is obtainable through either the Nuclear Mutual Limited insurance company (a utility mutual company) or through American Nuclear Insurers-Mutual Atomic Energy Reinsurance Pool (private insurers). Although all utility companies with nuclear reactors will undoubtedly make arrangements to obtain increased property damage insurance coverage as it becomes available, we believe it would be in the best interests

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of the public if such coverage were mandatory, possibly even made a condition of the utility's operating license. We also believe that to the extent adequate levels of coverage can be provided, the private sector should be encouraged to continue providing property damage insurance coverage.

In recognition of potential problems by the insurance carriers of increasing insurance coverage to a level determined to be adequate by NRC, we have recommended that NRC closely follow the actions taken to upgrade insurance coverage. If NRC finds that adequate levels of coverage cannot be obtained from the private sector, it should suggest to the Congress what Federal action may be appropriate to overcome the deficiency. One action might be to legislatively require the second-layer coverage proposed in S.1606 by authorizing NRC to mandate a retrospective premium adjustment in the amount needed to cover accident recovery costs beyond that provided by the primary carrier. This would be comparable to current provisions in the Price-Anderson Act for off-site insurance coverage. These retrospective premium assessments could be provided to the utility incurring the loss through the primary insurance carriers, negating the need for Federal involvement to handle such funding.

From GPU's experience to date with TMI-2, it is clear that time is money in an accident recovery effort. Long delays mean escalating costs, greater use of replacement energy, and difficulty in retaining qualified personnel. Although not a direct mechanism for financing future accident recovery efforts, we believe that a determined effort by NRC and State regulatory commissions to establish a responsive regulatory climate for the utility could reduce the accident recovery time and thereby the cost--both to the utility and its customers. Consequently, we have recommended that NRC develop appropriate guidelines for utility use in preparing cleanup/recovery procedures for NRC approval. We believe that if these guidelines are updated to reflect acceptable standards and state-of-the art technology for decontaminating air and water effluents produced by a to nuclear accident, NRC can respond to the needs of the utility more quickly and adequately protect public health and safety.

We recognize that one of the primary functions of State regulatory commissions is to set consumer rates that are reasonable and not excessive. State commissions also have a responsibility, however, to insure the financial viability of their jurisdictional utilities. It is important that they recognize the impact that a major nuclear accident can have on a utility's cash needs and its ability to obtain financing to meet continuing operating, maintenance, and other expenses. We do not believe that the rate treatment accorded the GPU companies for example, has enhanced their ability to adequately deal with the pressing current problems much less those of the future. As a result, GPU has been forced to continually cope with the complexities of the accident recovery effort and maintain system reliability with very limited financial resources. This has required the companies to impose some rather austere constraints on their operating units. We find it somewhat paradoxical that regulatory commissions are quick to take advantage of utilities' efforts to reduce consumer costs by constructing nuclear units with low operating costs but are reluctant to have the consumers that benefitted from the lower cost energy share the risk with the companies and participate in a recovery effort when an accident happens. The company, in effect, is financially penalized as a result of efforts taken to keep rates low. We do not believe that the interests of equity are well served by this "one-way street" type of rate treatment. We further believe that this is an important lesson that all State regulators can learn from the TMI experience and, if appropriately applied, would help mitigate the adverse consequences of any future accident.

Let me close on one final note regarding GPU and the hurdles it faces in the near future. Several events will soon occur which could have a dramatic effect on GPU as a long-term provider of electricity in its service area. These events are closely tied to the rate treatment afforded the company by the State regulators.

In our report we noted that we do not believe that bankruptcy is a desired option for dealing with the problems at TMI. We also noted that the rate of return on shareholder's investments in both units has been eliminated, with all dividends to shareholders suspended. Finally, we noted that the company has been operating on short-term borrowings, and has over $400 million in long-term debt which comes due between 1981 and 1985. Most of the redemption for this indebtedness occurs between 1983 and 1985. If responsive regulatory actions are not taken to restore

GPU's financial viability, the undesirable option of bankruptcy could become a real and serious threat in early 1983, if not before.

The most serious and apparent problems face Met Ed. The company faces a tax payment of about $25 to $30 million in April 1982. In addition, about $11 million in payments to DOE have been deferred several times. Due to shrinking credit availability there is a deficiency of at least $21 million which must be resolved in the next nine months. If another tax payment crisis occurs in the Spring of 1982, as it did in the Spring 1981, Met Ed will not have the lines of credit available to it to meet these needs. Even if the Spring of 1982 obligations are met, however, the financial problems are not solved because Met Ed has a bond issue of about $50 million maturing in the Spring of 1983, as well as its tax payment for that year. Therefore, the total additional capital required in April 1983 will be about $80 million. The company anticipates having to meet these obligations from internally-generated cash resources.

Rate relief is clearly needed by GPU in order to generate the necessary cash to meet its needs. And this rate relief can come only from the State regulatory commissions of Pennsylvania and New Jersey. These commissions, therefore, literally have the future of GPU and its customers in their hands. Given the past regulatory actions of the commissions, there is no reason to expect that lenders would be willing to come to the aid of GPU. These commissions will have to give a strong, clear signal that they are willing to restore the financial viability of the companies before anyone will be willing to extend GPU the lines of credit it needs for its operations. Since the financial rebuilding of GPU will take time, we believe it is imperative that the commissions immediately begin to restore the companies' financial viability.

Fortunately, there is sufficient time to take corrective action. The time should be used as advantageously as possible to allow the company to regain its financial health, thereby ensuring continued power supplies to its customers. We cannot over-emphasize the critical importance of the state commissions to act as an integral part of this rebuilding process.

Mr. Chairman, this concludes my prepared statement. I will be happy to answer any additional questions you might have on this matter.

SCHEDULE OF FEDERAL AGENCY COSTS IN RESPONSE TO THE THREE MILE ISLAND ACCIDENT

Department of Energy		
March 28, 1979 to July 15, 1979	$ 1,623,000	
1980	5,988,000	
1981	6,500,000	
Subtotal - DOE		$ 14,111,000
Federal Energy Regulatory Commission	14,000	
1980	5,040	
1981		19,040
Subtotal - FERC		
Environmental Protection Agency		
Region		
1980	6,500	
1981	6,500	
Headquarters		
1980	3,700,000	
1981	6,980,000	
Subtotal - EPA		10,693,000
Nuclear Regulatory Commission		
1979	24,400,000	
1980	107,100,000	
1981	118,800,000	
Subtotal - NRC		250,300,000
Federal Emergency Management Agency		
1979 - Short-term Response	12,710	
1979 - Overall Planning Efforts	10,000	
1980	25,000	
1981	25,000	
Subtotal - FEMA		72,710
Total		
1979 - 1980 Actual Expenditures	$142,879,210	
1981 Estimated Expenditures	132,316,540	
Total Expenditures		$275,195,750

SCHEDULE OF FEDERAL ENERGY EMERGENCY AND NON-EMERGENCY COSTS FOR THREE MILE ISLAND

AGENCY	COST		TOTAL
	Emergency	Non-emergency	
Department of Energy	$ 1,623,000	$ 12,488,000	$ 14,111,000
Federal Energy Regulatory Commission	-	19,040	19,040
Environmental Protection Agency	-	10,693,000	10,693,000
Nuclear Regulatory Commission	24,400,000	225,900,000	250,300,000
Federal Emergency Management Agency	12,710	60,000	72,710
Total	$26,035,710	$249,160,040	$275,195,750

Senator **Heinz**. Mr. Peach, I have given a lot of thought to the issue on the need for legislative support to utilities that will be coming forward with contributions. As a personal matter I am inclined to believe that there is probably no alternative but to have legislative support for that. I'm glad that you raised the issue because it will be one to explore later on today, and it may be that we will ask GAO to give us some additional research on that as we proceed here, but I thank you for raising that question.

I want to give Secretary Brewer a chance to say anything and I suspect he may have a comment or two he wants to make on the question of Federal contribution.

STATEMENT OF DR. SHELBY T. BREWER, ASSISTANT SECRETARY FOR NUCLEAR ENERGY, DEPARTMENT OF ENERGY

Dr. **Brewer**. I have very little to add to Secretary Edwards' testimony this morning but I would like to clarify some of the points that he made and some of the figures that have been discussed in the last few moments.

First of all the Department of Energy program at TMI is totally R. & D. in character and justified on its generic benefits to the nuclear power option in this country. And it is not a Federal bailout for the GPU system.

A figure is mentioned in the letter of Counselor Meese to Governor Thornburgh, a total of $123 million. That is $75 million plus $48, including about $12 million of which has already been appropriated. The question arises, and has been in fact put today, what fraction of that would indeed displace costs which would otherwise be borne by GPU or others in the cleanup effort. I simply have to tell you Senator, I cannot answer that question. My pencil is not sharp enough at this time to tell you whether it's $25 million, $50 million, or the full $123 million.

One of the elements of our program is prompt access to the core and removal of the core. That in itself could accelerate and displace efforts that would be on the critical path toward the total cleanup process. So I simply can't detail out those costs which would displace costs which would otherwise be borne by the utilities.

Senator **Heinz**. At this point you're not able to say how much of this might offset the $570 million of cleanup costs?

Dr. **Brewer**. No, sir.

Senator **Heinz**. We will recess until 2 o'clock.

[Whereupon, at 12:40 p.m. the hearing was recessed to reconvene at 2 p.m.]

AFTERNOON SESSION

The **Chairman**. One of our witnesses has an unavoidable conflict later and in an attempt to accommodate that particular witness, it would be my intention to call upon him for testimony at this time and then we will address questions to him along with the existing panel. That will get him out on time to meet his commitment; and I think there is one other arrangement we will have to make with respect to the sequencing of the witnesses, but I know of no other problems.

With that in mind I wonder if we could have Mr. John Minnich, Chairman of the Nuclear Regulatory Commission Citizens Advisory Board for Harrisburg, Pa. If you could take the witness stand. You gentlemen can remain there while he comes forth.

We have your prepared statement, you may deliver the statement or summarize it in whatever way you would prefer.

Mr. MINNICH. Thank you, Senator. I think I'll just read it, it's very short.

STATEMENT OF JOHN E. MINNICH, CHAIRMAN, NUCLEAR REGULATORY COMMISSION CITIZENS ADVISORY BOARD, HARRISBURG, PA., ACCOMPANIED BY JOEL L. ROTH, MEMBER

Mr. MINNICH. I am John E. Minnich, Chairman of the Nuclear Regulatory Commission Citizens Advisory Board, Harrisburg, Pa.

With me today is Mr. Joe Roth sitting over there at the table, a member of that advisory panel and also Mayor Bob Reid who is here in another capacity but who is also a member of that committee.

We appreciate very much this opportunity to appear before you. We commend this committee and subcommittee members for holding this hearing on a subject that is very near and dear to us, the cleanup of Three Mile Island Unit 2.

I wish to state at the very outset that I am not speaking for the panel as a whole. This past month the panel began to review the various proposals including Senator Heinz's bill S. 1606 for the cleanup of Three Mile Island Unit 2. We have heard from the various parties concerning the proposals, but had made no conclusions. The panel is meeting tomorrow evening in York, Pa., and will be reviewing those proposals and considering whether or not a stand will be taken.

My experience to date on Three Mile Island Unit 2 has been rewarding, enlightening, yet very often frustrating.

While the panel has not taken a definitive position on any of the proposals, the panel has by consensus decided that Federal help is absolutely essential to the cleanup. As a result of that consensus the panel has visited Washington, D.C., on two separate occasions seeking assistance in two distinct areas of concern. One, the removal of the radioactive waste as promptly as possible and two the Federal financial assistance in the cleanup process.

I might interject Mr. Pallodino was also a member of our panel at that time, and in fact visited Washington with us.

We have been successful in obtaining the removal of what was a stockpile of radioactive material from the island. To that effort and commitment we of course owe a great deal of thanks to many people in the NRC and in DOE. As to the subject of Federal financial assistance, we have met nothing but stone walls and a failure of people in the Federal Government to accept the moral responsibility if not the legal responsibility in getting Three Mile Island Unit 2 cleaned up. We have attempted to meet unsuccessfully with individual Senate Members, Senate committees, President and his staff. We have met with individual Members of the House and/or staff but with little or no results.

I believe that the Federal Government, molder of Federal policy on nuclear energy, has a very definite obligation to participate in the cleanup of Three Mile Island. The health, safety, and well being of the residents of the counties surrounding Three Mile Island is of paramount importance. I need not remind you that we will soon enter the fourth year of the accident and that progress in the cleanup has been extremely slow. I shudder to even entertain the thought of another accident based on the track record of the Federal Government to date.

From the data we have been able to obtain as a panel, it appears the General Public Utilities cannot absorb the cost of an uninsured cleanup. General Public Utilities estimate approximately $135 million needed for 1982 with $65 to $70 million available, leaving the funding gap of $65 to $70 million. Certainly the ratepayers cannot pay the total cost and I've heard some of the discussion this morning, particularly the thrust of the ratepayers paying the cost of that cleanup.

It is my opinion that Federal dollars are necessary to insure the continuing cleanup of Three Mile Island Unit 2 whether those dollars are direct dollars or a front-end loan. I leave that to the wisdom of others. However I would point out that a loan already burdening ratepayers would ultimately bear the total physical cost of the cleanup.

A question that one can raise in reviewing the various proposals and the financial involvement of the Federal Government is could any funding bills contain a mandate timeframe for the involvement and financial commitment of other appropriate units such as the nuclear industry and the States of Pennsylvania and New Jersey. For instance, the GAO report to Congress on a greater commitment needed to solve continuing problems at TMI indicates the States of pennsylvania and New Jersey and their respective public utility commissions should play a lead role in resolving the current impasse.

I believe that Governor Thornburgh, Senator Heinz, Senator Specter, and Representative Rodal have attempted to do just that. It is obvious, however, that because of the complexities involved, questions raised, and various players in the scenario, that more time is needed to develop and refine the share funding mechanisms necessary to resolve the total funding of the cleanup.

One of the questions asked in the letter of invitation to appear here today was any possible future accident situations. My immediate concern, of course, is the cleanup of Three Mile Island Unit 2. While the possibility of future accidents cannot be discounted, because of the urgency of the cleanup I would suggest that legislation for future accidents be severed from legislation dealing with the cleanup unless it is politically unfeasible.

I would submit that is a question only the Members of Congress can answer. May I get back to the subject of the mental well being of the residents of the Three Mile Island area, you who were fortunate not to have been a resident of the area at the time of the accident cannot appreciate the problem of those who have undergone the trauma of it in the period of 1979. I'm not sure that I fully comprehend the problem even though I was deeply involved at the time.

I have often stated I was fortunate, I was so busy with our emergency management agency I did not even have time to dwell or think upon the drama of the time. However, that was not the case for many residents of the area. They have undergone a very tramatic experience. One that has left an emotional scar that someone must try to understand. The failure to expeditiously clean up Three Mile Island Unit 2 is only adding to that trauma. Hence my plea for Federal assistance in the cleanup.

I might mention also, Senator, if I may, or refer to the NRC statement that was submitted I believe by Dr. Palladino and the fact that there is real question of that unit sitting there in the condition it really is in and the concern expressed by the NRC. There are too many uncertainties and dangers as long as that contaminated time bomb is allowed to tick. Help us to defuse it please.

Again I thank the panel for permitting me to appear and will be most happy to answer any questions you might have.

The CHAIRMAN. Thank you very much.

I think under what we had outlined, all of the members of the panel are now subject to questions.

Senator Heinz?

Senator HEINZ. Thank you.

I have a question for Mr. Palladino. On page 2 of your statement you state, and I quote, "We would like to stress that the remaining insurance funds are running out and that the imposed funds specified in section 6 of the bill may not be established in sufficient time to provide adequately for near term cleanup costs. You may thus wish to consider to skip steps to bridge any gap in time for a mechanism such as that provided in the bill as in place."

That suggests to me that you feel that there is a tremendous imminence and importance to solving this question quite soon. My question is, How much time do we have and what are the health and safety consequences of delaying procrastination?

Mr. PALLADINO. That statement is referring primarily to the financial condition of the GPU organization and not to the imminence of a safety threat. Our feeling is it takes time to get a bill through Congress and get a new insurance format established. If it's not done expeditiously we could end up with GPU in worse financial straits than it is now.

Senator HEINZ. How much time do you think GPU financially has?

Mr. PALLADINO. I can only speculate because I'm not involved with financial problems. First of all, I know for a fact that GPU in setting forth its schedule is counting on having resources available beginning January of 1982, and—if that is delayed—the longer that is delayed, the longer cleanup might be delayed. They only have, I guess, about $80 million now, and at the rate they're spending, if they don't have some relief it could be more like a half a year with that money rather than a full year.

Senator HEINZ. They could be out of money in six months is that correct?

Mr. PALLADINO. That is my understanding of the situation.

Senator HEINZ. How much just roughly needs to be spent per year to maintain reasonable progress in cleanup?

Mr. **Palladino**. The numbers I've heard have been on the order of $135 to $150 million a year in order to keep the cleanup progressing.

Senator **Heinz**. So it is quite possible that in a sense there will be a cessation of the progress and if the progress for whatever reasons should take place, what would begin to happen in the containment? What would happen onsite if hypothetically the cleanup activity were to grind to a halt very soon, what kinds of risks would begin to incur in public health and safety?

Mr. **Palladino**. It would take some staffing to monitor the reactor facility just to keep it the way it is, and to monitor all the instruments. The reactor I understand would run around $25 to $30 million a year if nothing were being done. It's not a situation you can walk away from. Otherwise as Governor Thornburgh indicated this morning we would be making this facility a de facto waste disposal site.

Senator **Heinz**. Is there any risk if you reduce the funding to just the bare minimum necessary? Just monitor $25 million? You mentioned that figure. Is there any possibility of deterioration of components?

Mr. **Palladino**. Yes, these kinds of things are possible, although they are of relatively low probability. But the probability increases with time.

There is always the possibility of some deterioration in some component of the containment which might cause the release of radioactive water. There is the ventilation system—we count on the filters working. And over a period of time they may go down in their effectiveness. There is always a chance somewhere of a fire involving radioactive material. I am also concerned about the instrument tubes that go from the bottom of the reactor vessel within the containment. If those fail then there is difficulty maintaining water level in the pressure vessel.

Now these tubes are stainless steel, and there are a lot of possibilities. Although probabilities are low. As time goes on those probabilities increase.

Senator **Heinz**. Has there been any evidence over the last year or so of any significant deterioration on any parts of the container?

Mr. **Palladino**. I think Governor Thornburgh referred to a recent leak that caused the release of about 50 gallons per minute for something like 10 hours, and it was not clear until the investigation what the cause of the leakage was and when it took effort to stop it. Now when they're simple things one can go in and maybe cope with them. But as time goes on we may face situations that we can't cope with as readily and they do lead to conditions that——

Senator **Heinz**. Would you agree with Mr. Minnich's statement that this is a time bomb ticking away?

Mr. **Palladino**. Well, his use of words is a little more colorful than mine. I would say we have a very serious situation and one that we can't allow to persist for a very long period of time.

Senator **Heinz**. I have some other questions but my 5 minutes are up.

The **Chairman**. Thank you.

Senator Simpson?

Senator **Simpson**. Thank you, Mr. Chairman.

Dr. Brewer who is here for the Secretary, let me ask you, the administration has not committed to contribute a specific dollar amount but have you any estimate of the range of funding we might be speaking about that would be carried out by the Federal Government if those functions were to be performed by the Federal Government?

Dr. **Brewer**. Yes. I'd like to clarify if I may, the contents of the letter from Counselor Meese to Governor Thornburgh. First of all, our role at TMI is to gather data, research and development data of a generic value applicable to the entire option. Our role there is not to bail out the utility. It may very well be that the funding specified in the letter, the $75 million and the $48 million, which total $123 million, may in fact displace costs which would otherwise be borne by the utility.

Our pencil is not sharp enough at this time to tell you what fraction of the total cleanup costs would be displaced by an expenditure of Federal funds for R. & D.

Senator **Simpson**. But do you feel Federal support or funding along the lines of the administration proposal is absolutely essential to resolve this issue?

Dr. **Brewer**. I fear, Senator, that the expenditure of $123 million is more than justified in terms of its generic benefit to the state of nuclear in this country.

Senator **Simpson**. There was some discussion this morning on the difference between this figure and the 190 that had been bandied about before. Do you have any observations on that?

Dr. **Brewer**. We feel our proposal of $123 million is consistent with the spirit of the Thornburgh proposal. The Governor, as I recall, this morning did not give any sense of precision to his own figures.

Senator **Simpson**. But you do feel that certainly there is a national benefit to be derived from the program after the Federal support has been rendered?

Dr. **Brewer**. Yes, sir.

And I also feel on behalf of the administration the need to seek convergence among all the parties in those problems to get the job done and get it done quickly.

Senator **Simpson**. I have some other questions. I'll submit those to you in writing.

I guess I would ask Chairman Palladino, your testimony indicates the situation is very serious. You also have noted in your comments the uncertainty about the availability of resources combined with the increasing potential of hazard to the public as time passes. I think from your testimony the Commission sees a very clear public benefit and is offering the financial obstacles for achieving the solution for cleanup with the Federal support. Is that a fair appraisal of your position?

Mr. **Palladino**. Yes, the Commission has gone on record indicating that it is very important to clean up Three Mile Island for the well-being of the public.

Senator **Simpson**. And you do not see that taking place if the GPU companies were left with the sole responsibilities for paying the cost?

Mr. PALLADINO. Well, there is certainly difficulty in seeing how they would do it.

Senator SIMPSON. And you do indeed see the national benefit and the research and development would be very valid and a very real thing as you perceive it as the Government would assist in the DOE and the DOE would assist and the Federal budget would assist in getting this done?

Mr. PALLADINO. Yes.

Senator SIMPSON. What might be the most significant national benefit or advantage that you foresee in the cleanup operation?

Mr. PALLADINO. Well we've learned some things already. We've learned quite a bit about procedures for cleaning up contaminated water in the magnitude that we face with TMI. The whole system has to be designed and constructed and operated, and this has to draw on a lot of experience from a lot of people. There will certainly be a great deal to be learned in coping with the core. Its condition is quite deteriorated from its initial condition and that will lead to new ways of handling core material. And that will depend on the degree to which it is disrupted. So there will be new tasks.

Also we'll learn about the fission products from the fuel within the core after we get the core out and get it into the laboratories. Also we'll be able to tell a little bit more about the water, the fragmentations of the pellets itself and a whole host of material characteristics.

Mr. GILINSKY. Senator, just for myself, I don't know whether I'd want to take a view on whether Federal funding is essential here. Obviously it would facilitate things. I don't know if I would want to come down on that question.

Senator SIMPSON. You do not, you're expressing that you do not——

Mr. GILINSKY. You were asking about the Commission's view, and I'm qualifying it, at least for myself.

Senator SIMPSON. One more question, and it has to do with either Commissioner Gilinsky or Chairman Palladino. Could you describe to us very briefly the status of the NRC and the present regulatory efforts with regard to cleanup? That is of interest in the subcommittee which I chair. Is there a plan now for accomplishing the various tasks that are needed to decontaminate the plant, to remove the reactor core, process the radioactive materials, transfer those? Have you reviewed the plans to meet the test of when the financial considerations are solved, that it will be possible to move swiftly and in a safe manner in accordance with the public health and safety, and I don't want to dabble in the decision process about the restart of unit 1, but obviously that is going to play an important part in solving the financial aspects of cleanup problems, and I realize that is a matter that is going to come before the full Commission, and a decision on the health and safety issue, and I do recognize the independence of this group. I learned that very well.

I wonder if you could give us a response on that and a cursory observation as to when the TMI-1 restart proceeding stands and when a decision on that restart might take place.

Mr. PALLADINO. With regard to TMI-2 cleanup, we have said that we have established a TMI program office here at headquarters and we also have a field office right under TMI. We have been engaged in evaluating the safety characteristics of many of the numerous proposals that have to be developed by the applicant and receive approval, and we've tried to establish that function so it's right at the field office so far as possible. Of course then there is the question of procedures, and all of those procedures have to be approved.

I think we have established a mechanism for handling the hundreds of routine problems that have come up. The last major item was the approval of the submerged demineralizer system which came about in June. We believe that we have geared up to work with the licensee in an effective manner to bring about the cleanup.

Senator Simpson. In other words, once we resolve these financial considerations we're ready to roll.

Mr. Palladino. I don't mean to imply that we won't have difficulties along the way, but we are prepared to cope with the difficulties. The Commission itself has established TMI cleanup as a high-priority item so I'm sure that we will get to the Commissioners themselves on any problems that may develop.

With regard to the TMI-1 restart, we have a partial decision from the hearing board on the management. The rest of the decision is expected from the Board sometime in November, except for the question of cheating. Whether or not the Commission will wait for any input on that I don't know. It might be possible that that is what the Commission will want to do, in which case it would take another month for the Commission decision.

Senator Simpson. Thank you. I have some further questions. I'll submit them in writing.

The Chairman. Thank you very much.

I'm not going to take very long and I'm certainly not going to try to cut back over some of the ground that has already been adequately covered, but I do need to address a couple of questions as well as comments, both to Mr. Peach and Mr. Minnich.

I particularly appreciate the work that GAO has done with respect to the analysis of the impact upon the rates. I also want to call particular attention again to what I understand was mentioned before but may perhaps not have been highlighted as much as I think it deserves.

With respect to pages 11 and 12 of your full testimony, Mr. Peach, on what will be the cost to the ratepayers if they pay for the entire decontamination process. There has been implicit on the part of many people representing either the specific area or the State of Pennsylvania that the ratepayers cannot pay and therefore ought not to be considered as a possibility that they be required to pay.

I expressed at the outset the belief that there is a national impact that perhaps can justify some national input, that there is a national benefit to be derived from the research associated with cleanup and the knowledge that we can get from that. I acknowledge the Federal role with respect to the handling of the radioactive wastes. We are evolving policy in that area. But I must record for the record my total agreement that the assessment by some, that the State commission bears the responsibility here. And they haven't been mentioned.

On page 12 of your statement, Mr. Peach, it is pointed out that GPU companies, and I quote from your statement, "The GPU companies have been placed," and I emphasize placed, you did not, I did, "been placed in dire financial straits largely as a result of past regulatory commission activities."

Mr. Minnich, I understand coming from that area you don't want to see your people saddled with the entire cost, but there has been a commission in Pennsylvania that seemed to have the idea that somehow they could shield your ratepayers from any of the cost. They're going to take it out of the hide of the management or out of the hide of the shareholders, or at any rate just simply stonewall any activity that would lead to any contribution by the ratepayers. If this is a partnership the ratepayer is going to have to pay something.

I don't want to see Federal preemption of the regulatory authority of State regulatory commissions. But if a regulatory commission is acting in such a way to shield their own people and shift the burden to the rest of the company, I think some of us have to speak out. I understand, Mr. Minnich, your concern. If I were there representing those people I would be concerned too. But let me indicate that we have a similar problem. Not because of a nuclear accident but because of a mismanagement accident and a financial accident with respect to the Washington Public Power Supply System in the State of Washington, that has regional impact. And there are some people in my region that have suggested that the Federal Government bail out that problem.

And even though it affects people in my State I said no way. The management of that system created the problem, the management of that system can find the answer. The ratepayers of that system can pay the full cost associated with the management decisions that were made. And here I am now being asked to help provide money for you, for the people in this area, for the people in that area of Pennsylvania. Well I have indicated a willingness to march part way with you for the national purposes and national benefits that are involved that I have outlined. I believe it's unreasonable to expect the rest of the country is going to shoulder your burden without your participation.

Mr. Minnich, I'd like to have your comment. Have you talked to the commission, do you intend to talk to the commission?

Mr. MINNICH. We have not yet talked to the commission. I can't speak for the commission, of course. I don't know that they have locked the doors forever on some payback. I indicated of course if it were a loan to GPU to help get the island cleaned up that obviously someone must pay it back, and that obvious someone would be the ratepayers in some means or other.

The CHAIRMAN. I think you're accurate in that assessment. In spite of the mirrors that some people might like to use it indicates somehow we take it out of the hide of management and as shareholders you have assessed the situation correctly.

Mr. MINNICH. I might point out, though Senator, Governor Thornburgh said it well this morning. Two things that I continue to hear among other things from people in Washington is, well the ratepayers in Pennsylvania for a long time have had very little weight, and certainly people that I represent from whatever area are paying much higher rates. And I don't think that our people can be penalized based on that premise. If the utilities were performing well and providing relatively low cost power, they should be commended for that, but the Governor said it well this morning. These people are the victims of an accident that happened over which they had no control. They can't go shopping to find another source of electricity. To burden them with the whole cost of the cleanup is just asking too much.

The CHAIRMAN. I understand that, but isn't that somewhat similar to the ratepayers of those who are penalized by the cost escalation and mismanagement and bureaucratic delays and the cost overruns in the Washington Public Power Supply System? Those ratepayers are equally hostage to decisions that were made by the management in that case, and the accidents of the marketplace that caused the problems that now are escalating the rates there.

Let me suggest that GAO report shows the highest rate escalation possible under the assumptions that they've made, and correct me if I'm wrong, Mr. Peach, are 15 percent. If the full cost——

Mr. PEACH. That's correct. It's the full allocation of $150 million.

The CHAIRMAN. If the full cost and the cost overrun and the necessary financial impact on the Washington Public Power Supply System is borne by the 80 entities that have contracted with them for the building of these plants, some of those entities will see their rates double; 100 percent, not 50 percent. And I'm saying tough luck fellows, you're going to pay it.

And you come in and tell me I can't say tough luck fellows, you've got to pay 15 percent.

Mr. MINNICH. That's 15 percent, and I appreciate, I was not aware of the Washington situation. I can appreciate what mismanagement can do, but these people are not only victims of an accident that was financially devastating, they are victims of an accident that is traumatic to many many people and in fact to more people than one realizes.

I had a very casual conversation just recently with a young lady who works in the courthouse. She is not even from the immediate area of TMI and I was surprised at her reaction and her fear of Three Mile Island sitting there in the middle of the Susquehanna. I think the situations are different.

I would dare to say in the mismanagement situation in Washington, D.C., there are certainly civil remedies available to people in that situation. I don't think we have civil remedies available here.

The Chairman. I don't think there are any civil remedies. Who are you going to sue? Will you sue everybody in sight and it will be passed on to the ratepayers? I suggest all you've done is add some attorney's fees to your problem.

Senator HEINZ. Is the chairman a former attorney?

The CHAIRMAN. I've heard of Philadelphia lawyers all my life. [Laughter.]

The only reason I mention it at all is it seems to me we must drive home the point that while there may be a Federal participation which can be justified, that you cannot shift the burden wholly away from the region.

Mr. MINNICH. I don't think I asked that, sir.

The CHAIRMAN. I haven't seen in here anywhere, in all of the testimony, a mechanism by which we are going to assure that the State regulatory commission allows some of the cleanup costs to be borne by the shareholders. We've talked all around that issue. But so far it hasn't been affirmative.

Mr. PEACH. This is related in a sense, and I think it's worth getting on the record. There has also been discussion about the expected savings that would accrue if we put TMI-1 back on the line by holding rates at the same level. And the figures we had indicating a savings may range from $32 to $56 million in terms of being a partial contribution toward the cleanup. I think the thing you need to recognize is the question of looking at the financial situation that GPU faces from our analysis of the situation, you wouldn't be able to really apply all that money in that manner. Whatever you did, you probably are going to have to look at a rate increase for other reasons. They've been running on a skeleton basis with the maintenance of their system for a considerable period of time which I'm sure is causing consumers in that area some problems.

They are looking at no dividends paid to shareholders which could force their stock down to below book value, so they can't raise any money from selling stock. They're looking at a situation where they've got to pay off the revolving credit agreement next year, $15 to $125 million in terms of short-term financing. And also there is an uncertainty of course, they can't get long-term money and at the same time they are looking at about $400 million of long-term debt coming due in 1983, 1985 time period, in a situation where they can't get long-term money.

Now I submit just what you said earlier, somewhere or another when you get forced into that kind of situation it's going to catch up with the ratepayers eventually in terms of keeping a viable system going. You have a utility that is providing service to that area.

The CHAIRMAN. I thank you for those comments and I don't mean to be unduly harsh just with respect to the Pennsylvania commission's past actions. We have kind of a national masochism that has been inflicted upon us in the guise of consumer protection that somehow we're going to protect the consumers, and we've really penalized them in the long run. And this is symptomatic.

Mr. PEACH. If I could add what is in a sense a commercial. We have been trying to take a look at utility problems and we have a report that we'll be sending to Congress hopefully within the next 2 weeks or so which we hope will serve as a primer to help to bring Congress up to date on a broad range of problems the utility industry is facing.

The CHAIRMAN. And GPU would have had some of those problems if TMI had not.

Mr. PEACH. That is probably correct.

The CHAIRMAN. I only mention it, I don't mean to in this context overburden the discussion, but I am certain that the Congress will in addressing this legislation be watching closely what is done with respect to the State regulatory utility commission actions that deal directly with the cleanup costs. And I want to reaffirm for the record what I have said repeatedly. I do not want to see Federal preemption, state regulatory utility actions either individually or generically. They have a responsibility, they ought to be permitted to discharge it. But when in the discharge of their responsibility they attempt to or have the effect of shifting the burden to people who do not receive the services of the utility then I think the rest of the country has a right to look at the results of their actions. And this is one of those instances where there are legitimate joint interests here.

The Federal Government does have an interest, a responsibility, and they do have some measure of benefit from learning from the cleanup activities. But it's not all the Federal taxpayers' responsibility.

I would invite the comments of any other members of the panel who would like to comment if they would on that point.

If there aren't any further comments, Senator Heinz, do you wish to ask some further questions?

Senator HEINZ. Just briefly.

The CHAIRMAN. I have a meeting and I'll leave the gavel in the hands of yourself and the chairman of the subcommittee and Environmental Works Committee. Thank you very much.

Senator HEINZ [presiding]. I don't ask this question——

Mr. Peach, I want to ask you a brief question with which I hope you can either agree or disagree. And this has to do with the question of ratepayers.

You remarked that if the ratepayers had to absorb the cleanup costs the rates would have to increase about 1 cent per kilowatt or 15.5 percent of the 1980 rate levels. It seems to me that posing the issue this way we ignore the real question, and that is the question of the economic burdens of these rates, particularly if you measure it by the proportion of the household income. I understand that your own report on August 26 points out that GPU customers pay 1.8 to 2.2 percent of disposable income for rates in 1980 and that that is already the mid to upper range of comparable utilities.

And your report further goes on to show, at least as far as I can tell on page 63, that if GPU had to absorb the cleanup costs that they would be tied for the highest percentage of disposable income among utilities compared to a 2.3 percent. Is that accurate?

Mr. PEACH. Let me just amplify, but I think it is essentially accurate. That if they absorb the cleanup costs they would be in the upper-mid range, but there would be utilities that would have equal or higher costs of disposable income for residential consumers if they were required to absorb the cleanup costs and also absorb the costs that were related to the restart of TMI-1 and bring that back into the rate base. It would put the Met Ed consumers as high a level as anyone else within adjoining systems.

Senator HEINZ. Now we have your cost estimate, or a total cost estimate, I guess that is around a million dollars for getting TMI-2 cleaned up.

Mr. PEACH. That is the total cleanup and money that has been spent to date.

Senator HEINZ. I recollect that a year and a half ago the total cost was estimated not by you but by others as about $400 million.

You estimate it at a million. And my question is do you believe that the escalation of those costs have stopped?

Mr. PEACH. Having experience on various programs of this type I guess I would never say I believe the escalation costs will stop. I'm sure there are questions that are unanswered with respect to what is going to be found as they complete the cleanup process. It's as close as you could probably get at this point but you cannot be sure about that.

Senator HEINZ. I don't recollect the exact figures, but if you took away the insurance that GPU has from the total cost we would find that right now they are bearing about $300, $360 million if they just have the total cleanup costs?

Mr. PEACH. It's $300 million and insurance, you'd be looking at a total additional cost of about $700 million that is involved. The question is would it include the operation and maintenance expenses in there.

Senator HEINZ. Let's use 700. That figure goes up. That's a proportion to the way it did in the last 12 months, instead of $700 million, you know, that could be a billion dollars next year and a $1.3 billion the year after that for all we know. I'm not saying that is a probability, but is that a possibility?

Mr. PEACH. Let me back up just a second. The figure that we show for the unfunded balance of the cleanup is about $570 million, unfunded balance of the cleanup.

Senator HEINZ. If the cost goes up 20 percent, that's $200 million, and the $570 becomes $770, isn't that right?

Mr. PEACH. 20 percent would be more in the neighborhood of about $110; 20 percent of 570 or 20 percent of the original, I guess it's a question of what base.

Senator HEINZ. I think you get my point that it's easy to have the 570 million go up to 670 or 770 or 870 at which point even you I don't think would disagree that a very high proportion of disposable income would be going to the ratepayers paying for energy.

Mr. PEACH. As that goes up if they were bearing the total cost——

Senator HEINZ. I just want to make sure everybody understood if you will about sensitivity analysis here, because you're talking about money on the margin that could make tremendous differences at this point.

Mr. PEACH. It wasn't our position this is the way you handle it. We took the position that share purchase is probably what you're going to have to deal with, but as a part of the analysis we were also providing, OK, this is the parameters of the costs you're talking about. And what it would involve if you passed the total cost through.

Senator HEINZ. There are two final questions I want to ask. I want to ask Chairman Palladino a question about the level of insurance for nuclear powerplants. As I understood your testimony this morning, Mr. Chairman, you were saying that the NRC was looking at this issue and you are waiting to see what could be accomplished through private means.

Now as I looked through your testimony over the lunch hour, I noticed that you avoided suggesting how much insurance you thought ought to be covered, ought to be taken on any nuclear powerplant. And clearly we know that the bare minimum that ought to be taken is a billion dollars. That is what in today's prices it's going to cost us because if we're lucky, that is not the top estimate, that is the low estimate. I don't think there's anybody who thinks there is a chance in a million that we could come in below $1.034 billion. It's going to be above that.

Now my question to you or members of the Commission is what is the right level of insurance for these facilities? Is it $2 billion, is it $10 billion? What is it?

Mr. PALLADINO. When my children respond to questions they say it all depends, and I have to use that. It all depends. It all depends on what kind of accident we're talking about. For the kind of accident such as just took place at Three Mile Island, now I speak primarily for myself because I'm not sure of the Commission position on it, although I think there is an implication of our Commission position in our testimony—that based on present costs and present estimates, about a billion dollars would handle that kind of an accident or some lesser kind of an accident.

If one wants to pose more serious accidents involving the various degrees of core meltdown, then those numbers will go up. And I must honestly say to my knowledge we've made no study that would give us the basis for an enlightened estimate.

Senator HEINZ. If there was general agreement that the Congress felt it should specify such a level, do you think we would be well advised or ill advised only to specify a billion dollars?

Mr. PALLADINO. If you were trying to cover——

Senator HEINZ. For whatever reason. Say there's 100 people in the Senate, who knows what all their reasons are. But just as a matter of responsible public policy, would a billion be a little on the low side?

Mr. PALLADINO. I'd have to speak for myself. I'd say it's on the low side.

Senator HEINZ. My last question is, and it's a question that's going to be a tough one for Mr. Peach and probably Mr. Brewer. We've had a lot of conversations today about what the commitment of the President is, DOE is, to this cleanup. Various numbers have been bandied about and it seems significant to me that the numbers are a little less essential than the functions that DOE has committed itself to taking care of.

Now as I read Counselor Meese's letter to Governor Thornburgh, the fractions that are involved here which DOE is going to take right on through to completion are technical assistance to clean up the water in the building basement, removal and disposal of abnormal waste not disposable at commercial sites, removal and evaluation of the damaged core, and obviously the big item there is removal of the damaged core. Developing special tooling needed for early core access, I suppose that could mean little machines that go in there with people in them like a space ship. I mean, who knows what that is.

Other appropriate activities consistent with these guidelines. So I guess anything to clean that core up and get that water out, and get it safely disposed of is involved here.

And my question, well let me first ask, Mr. Brewer, have I read the letter correctly?

Dr. Brewer. Yes. You've read it essentially correctly. Our commitment is to move offsite something like 15 percent of the core for examination. The remainder of the core is to be stored onsite.

Senator Heinz. Is that what you're providing is to preserve the core, 100 percent? Take 15 percent of it for study someplace. What do you do, just kind of chop 15 percent out of there? Isn't that a messy operation? You wouldn't want to do that——

Dr. Brewer. I wouldn't do it with my bare hands.

Senator Heinz. We wouldn't want anybody untrained to do anything like that, but you wouldn't propose to take that rather intricate creature and get a buzz saw and chop off about 15 percent of it and take it down to the lab someplace. You wouldn't do that on Three Mile Island, I'm sure.

Dr. Brewer. Our methods are a little more sophisticated than that. But, our current plan is to take a portion of the core offsite for examination.

Senator Heinz. But you would intend to leave the other 85 percent of the core there?

Dr. Brewer. Onsite in a safe canister fashion. Now one possibility that has been discussed is the residual value of that core, something like $80 million, is still inherent in the value of the core in terms of the separative work units and the uranium content of the core, but the core is the property of the utility.

Senator Heinz. So you might buy it from them?

Dr. Brewer. I have not made that commitment.

Senator Heinz. I didn't say that. I wanted to find out what the possibilities were.

Dr. Brewer. I said it was a possibility.

Senator Heinz. Now that we have a fairly good understanding of what is involved here, my question to Mr. Peach is, as we described the functions that DOE has just described, do you believe we are really talking about a $25 or a $50 million contribution here? Is it in that range? Or is it something different and higher?

Mr. Peach. Senator, I guess I wouldn't want to answer that question specifically. I would probably have to do some further analysis and take a closer look at it. It seems to me that what is inherently involved here is taking a look at the work done by the contractor for GPU, that underlies their estimate of the total cost of cleaning up TMI-2 and contrasting that against what DOE sees itself doing on the research and development. And seeing how much of those things are comparable to costs that are involved under the contract, an estimate of cleaning up TMI-2. There lies the answer to that puzzle, if it's clear enough that you can analyze those two things, compare them and come to a number. As I said, we have some rough understanding, a general understanding from our earlier work that indicated about one-third of what the Federal Government expected you to do in the way of research and development activity would actually offset costs that were comparable to and involved in the cleanup of TMI-2 as envisioned by the utility.

Senator Heinz. Thank you.

One last question to Dr. Brewer. In his opening statement Secretary Edwards indicated at this time he wouldn't favor legislation to put all the pieces of humpty dumpty together, but he might in the future if the pieces didn't fall together naturally.

At what point do we have to really move on this? What is the danger point beyond which we can't wait to move legislation?

Dr. BREWER. Well the Secretary asserted that private underwriting with the utilities was the preferred approach rather than a Federal bureaucracy which would have to be staffed up, et cetera. The Secretary said only if after a reasonable period of time the private efforts are not successful, the need for Federal action can be reconsidered.

Senator HEINZ. What is that reasonable time? I mean how long do we have? At a certain point it becomes unreasonable to wait. What is that dividing point?

Dr. BREWER. For increased coverage for future events of this type or for settling on the TMI situation?

Senator HEINZ. The TMI.

Dr. BREWER. I think the time period is quite urgent given the financial condition of the utility, and understanding that the accident is nearly 3 years old. The water has been sitting there. It is an institutional failure of the worst kind if the parties cannot come together on converge for this problem.

Senator HEINZ. I think that what you said has to be emphasized in the record, because what you're saying is while everybody would prefer a solution that didn't involve us, I mean I would prefer a solution that didn't involve us because I didn't introduce my legislation until May, that I announced my intention to introduce it, but can we wait until May of 1982 before a solution is in place here?

Dr. BREWER. I think one of the witnesses has indicated that early 1982 is a must for a solution.

Mr. PEACH. I would endorse 1982, early. GPU does have a rate filing and a way to provide some relief, and there may be some indication as I understand it of Commission action in that area as early as November which will add additional information.

The other thing I would like to get on the record from the standpoint of legislation you proposed, while we have suggested we prefer to see it work in the private sector and we know there are initiatives underway there which have to be watched closely, there are other pieces of legislation that have been submitted, but our general preference would be if the Government had to get involved in terms of insurance fund would be to use an existing, like DOE, to manage the program as opposed to setting up a complete new bureaucracy in the way of an insurance corporation.

Senator HEINZ. We would contemplate using DOE under 1606.

Mr. PALLADINO. I want to make sure that aside, from the question of dollars, the Secretary of Energy, or DOE, is prepared to remove the core and to receive it, process it and to store it. This cannot be accommodated anywhere else, and not on the island.

Senator HEINZ. Then there is a conflict between what you just said——

Mr. PALLADINO. That's why I'm speaking. You said something about 15 percent. There is no place else to send this core.

Mr. GILINSKY. I agree with this. The core has got to go to a DOE facility, and the sooner it's made clear the better.

Senator HEINZ. What you're saying is NRC won't permit that core to be stored there.

Mr. Palladino. Definitely.

Senator Heinz. Once it's removed you won't permit it to be stored therefore it's going to have to be taken someplace. I don't know what you want to say to that, Mr. Brewer.

Mr. Palladino. Incidentally, we have a suggestion on the bottom of page 6 in our testimony pointing out that section 7 should be expanded to authorize——

Senator Heinz. Very well. Mr. Brewer, do you have any other comments you'd like to make?

Dr. Brewer. We have about 2 or 3 years before we have to cross that bridge on the ultimate disposition of that core. Now certainly the Federal Government has ultimate responsibility for permanent disposition of high level waste, that is what our permanent repository program is all about. We have no commitment at this time to take the whole entire core. We may in the future, but I'm not prepared to make that commitment at this time.

Mr. Gilinsky. So long as that question isn't clear there is a certain amount of uncertainty that attaches to the situation. I think it would be good to resolve it. I can't imagine the waste products from that core going anywhere but to a DOE facility, and it is not in the same configuration, well this core is not in decent shape. We have to make clear that the Government will accept the core at a Government site.

Senator Heinz. When it comes to cost sharing you have to have a package, the total of which is understood, and the pieces of which are clearly demarcated.

I'm going to have to ask Mr. Peach to look at the alternatives in terms of if the Federal Government contribution is what Mr. Brewer would say today, what does the package look like if it is what Chairman Palladino and Commissioner Gilinsky say, you know, what are the implications of that? We may have to ask you to do a little more numbers work for us. I'm not sure I'm clear on what that all means.

Senator Simpson. I'm going to defer to you and let you chair the remaining. I do have another engagement. I have lots of questions. I'm not going to ask any of them now because we are very much in arrears. I will submit those in writing. I very deeply appreciate having you here and in cochairing the hearing with Senator McClure, I am chairman of the subcommittee of the Public Works Committee, but knowing of Senator Heinz's deep interest I will certainly defer and he will chair this and I will assist him as he might direct. But at this point I think we're ready for the next panel.

[Subsequment to the hearing Mr. Gilinsky submitted the following:]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

OCT 29 1981

OCT 30 1981

October 28, 1981

The Honorable James A. McClure, Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Attached are some additional views on S. 1606 which I expressed in response to an Office of Management and Budget request for Commission comment on that bill. Since I did not make these comments when the Commission recently testified before you on this matter, I thought you should have them.

Sincerely,

Victor Gilinsky
Commissioner

Attachment:
As stated

cc: The Honorable Henry M. Jackson

COMMISSIONER GILINSKY'S ADDITIONAL COMMENTS TO OMB ON S. 1606

I am in agreement with the position expressed in the Commission's testimony on S. 1606, the "Nuclear Power Plant Property Damage Insurance Act of 1981." However, I would like to raise two additional points for your consideration. First, I would think that, before committing itself to support a statute under which the government would, in effect, tax nuclear plant operators to underwrite part of General Public Utilities' costs of cleaning up the TMI-2 accident, the Administration would want to be satisfied with the competence of GPU's management. Secondly, I think that any statutory scheme which provides financial assistance to the clean-up of TMI-2 should explicitly consider the possible ramifications of the $4 billion lawsuit which GPU is in the process of filing under the Federal Tort Claims Act charging the Government with responsibility for the accident.

Senator HEINZ. Mr. Austin, would you please proceed.

STATEMENT OF T. L. AUSTIN, CHAIRMAN OF THE BOARD, TEXAS UTILITIES CO., ACCOMPANIED BY HUBERT NEXON, SENIOR VICE PRESIDENT, COMMONWEALTH EDISON, REPRESENTING THE EDISON ELECTRIC INSTITUTE; AND JOHN KEARNEY, SENIOR VICE PRESIDENT, EDISON ELECTRIC INSTITUTE

Mr. AUSTIN. Thank you. As you said, we have Mr. Hubert Nexon here, senior vice president of EEI. Its members provide about 78 percent of the Nation's electricity serving over 67 million customers. And we appreciate this opportunity to appear before you. And we have a statement that with your permission we would like to be filed accordingly as part of the record of this hearing, and I'll try to summarize it if you want.

Senator HEINZ. We'll make sure your entire statement is part of the record.

Mr. AUSTIN. As you know there are several factors that restrain the use of nuclear power and make uncertain licensing procedure and a lack of an institutional means to deal with the radioactive wastes. But foremost among the immediate problem is the lack of resolution regarding the TMI-2 cleanup. And we think that the knowledge gained from this is a real R. & D. for the industry.

I know that this is a question that has been asked a lot here today, but I think most people that I have talked to continue to talk about radiation research or something like this, but I think as an engineer of the operations research, just doing this for the first time, and your question a minute ago about a billion dollars as just a minimum, I think if you go through it the second time you can save a lot of this money because regulators will know what to do, the companies will know what to do. And as an engineer, I'm just glad it's the first time on the Kuhns system and not on the Texas system.

Senator HEINZ. The record will show that you are willing to have the next TMI. [Laughter.]

Mr. AUSTIN. It is for this reason that this valuable knowledge that can be obtained from the cleanup operation, that the Edison Electric Institute has taken an active role in attempting to develop an equitable plan to insure the prompt and effective cleanup. So our recommendations are the following concept of those of Governor Thornburgh, but we think, we wish Senator McClure was still here.

Senator HEINZ. I think you'd find a lot more sympathy with that.

Mr. AUSTIN. The Thornburgh approach is good as far as we're concerned because it does include the ratepayers of the general utilities and the States of New Jersey, the Federal Government. So the EEI board has said, we would come up with some kind of equitable way to take $16 million a year for 6 years, and put it on our utilities, and then another $16 million and put it on these nuclear utilities. And that way if we can find an equitable way to do that then it would be shared by kilowatt hours in one case and the megawatt capacity of the nuclear powerplants in the other case.

And I'd like to make it clear here, we think this should be equitably distributed over the whole industry, but we can only speak for EEI. We have some people in our industry that might not want to go along with this unless some equitable way of distributing it among everybody is concerned. The EEI board feels that we should make this commitment and have it not contingent upon the participation of others, and cap it so it's not open-ended. And this we think, if we make a commitment that is not open-ended, it's an incentive for the public utility commission to come up with the rest of it '

The Institute believes that the prompt restart of TMI-1 is essential. We also think that the Federal Government has a participation here because as I said a while ago I think the operations research of cleaning this thing up is valuable to the regulatory part of the Federal Government and also to keep this as a viable option as a fuel for the United States '

We are also working on this industry; Senator Heinz, I'd like to commend you for bringing attention to this. And we still think we ought to have a private approach to this, but I'll put on my personal hat now. If we can't get it done pretty soon, we don't want to wipe any bridges behind us, but we think the private approach is first. And I'd like for Mr. Nexon to say a few words about the insurance program.

Mr. NEXON. Recognizing like you, Senator, the need for increased insurance coverage, the industry completed its organization of the insurance by which it should rather promptly provide $500 million of property insurance for losses in excess of $500 million. Today utilities can purchase insurance on nuclear plants with limits of $450 million from one insurer and $375 million, shortly to be increased to $450, from the other insurers, with the addition of the $500 million insurance to be provided by our new project. This would mean that the utilities can purchase up to $950 million, and were both organized so that the available limits can grow. I am confident that this will occur.

We will issue our first policies about November 15. Initially they will provide protection of between $125 and $150 million. The amount of coverage available, however, will grow very rapidly as additional utilities have already signified their intentions to get board and commission approvals to join the project.

I should perhaps add that the excess property insurance program is the second post-TMI insurance program the industry has developed. The first is the program to insure against replacement of power losses in case of prolonged nuclear outages and that program now provides coverage up to $180 million against such costs which obviously enhances resources in addition to the $500 million, excess of $500 million that we now have lost.

Mr. AUSTIN. In summary we are for the approach of cost sharing to clean it up and the private insurance program to see that everything is covered in the future. We will answer any questions you might have.

Senator HEINZ. Would you identify yourself?

Mr. KEARNEY. My name is John Kearney, I'm senior vice president of Edison Electric Institute.

[The prepared statement of the Edison Electric Institute follows:]

STATEMENT OF THE EDISON ELECTRIC INSTITUTE ON THE FINANCIAL ISSUES RELATING TO THE CLEANUP OF THE THREE MILE ISLAND SITE AND SENATE BILL S. 1601

Introduction

The Edison Electric Institute is pleased to present its views on the financial issues relating to the damaged Three Mile Island Unit No. 2 nuclear power reactor (TMI-2) and S1606, a bill to supplement insurance to pay the cost of necessary remedial action following damage to nuclear power plants, including certain remedial action at TMI-2. The Institute is the association of investor-owned electric utilities. Its members provide about 78 percent of the nation's electricity, serving over 67 million customers.

Presently, some 11 to 12 percent of our total national output of electricity comes from nuclear power. Today's nuclear generating capacity, some 57,000 MWe, exceeds the entire installed electric capacity as it existed in this country just 35 years ago. In addition to the 76 operating nuclear plants, some 80 additional facilities have construction permits from the NRC. When completed, these will add about 88,000 MWe of generating capacity, which will result in generation from nuclear of about 30 percent of the national total. Nuclear power already is providing over 50 percent of the electricity in some areas of the country. The reliance on nuclear power has provided major benefits to the customers of electric utilities in terms of lower costs of generation, diversity of fuel resources, and decreased reliance on imported foreign oil.

Impact of TMI-2 on National Energy Needs

There are several factors that restrain the use of nuclear power, such as lengthy and uncertain licensing procedures and the lack of an institutional means to deal with the high-level radioactive waste management issue. But foremost among the immediate problems is the lack of resolution regarding the cleanup of TMI-2. Without a solution to this problem, we can expect a continued lack of public confidence in the safety of nuclear power. Surveys of public attitudes and of the media support this viewpoint. Furthermore, the financial community is reluctant to invest further in nuclear power facilities unless it believes that there is an effective and equitable financial plan to deal with the TMI-2 cleanup. Failure to settle the TMI cleanup issue, and thus leaving GPU's future solvency in doubt, could adversely affect the financial standing of all utilities, particularly nuclear utilities. This, in turn, will result in higher money costs which will not only impact adversely on nuclear power programs but also upon other utility capital requirements and thus ultimately raise the cost of electric service to consumers.

No new nuclear power units have been ordered in this country during the past two years and certainly the inaction on TMI cleanup has contributed to that result. Additionally, an unresolved TMI-2 cleanup issue will add immeasurably to the uncertainties of utilities' current nuclear power programs. Without new domestic orders, our U.S.nuclear equipment industry will become stagnant and will not be able to compete for foreign business, with a subsequent loss of any opportunity to assist in strengthening our economy, improving our balance of payment and taking a leadership role in international nuclear non-proliferation programs.

It is for these reasons and the valuable knowledge to be obtained from the cleanup operations that the Edison Electric Institute has taken an active role in attempting to develop an equitable plan to assure the prompt and effective cleanup of TMI-2.

Senate Bill S1606

Before presenting the details of our approach, the Institute, in response to your request, wishes to comment briefly on S1606 which was introduced by Senator Heinz (PA) on September 9, 1981. This bill identifies and proposes solutions to the two issues of concern to the electric utility industry and undoubtedly to the Congress, namely: (1) the need to finance and accomplish the cleanup of TMI-2, and (2) the need to assure the availability of adequate funds for the cleanup of any future nuclear power accident. Senator Heinz should be commended for bringing these issues to the attention of the Congress, for offering solutions and for constantly making certain that the issues receive the analysis they deserve. The basic approach of S1606 is to deal with both issues on a "cost-sharing" basis with a single funding mechanism. The Institute, however, believes the two issues, the cleanup of TMI-2 and funding of any future cleanup operations should be decoupled, and their financing treated separately. EEI does not think it necessary, or appropriate, to establish a government-administered fund to assure adequate property insurance coverage. EEI prefers the private insurance approach, which it recently announced, and a separate "cost-sharing" approach to the cleanup of TMI-2.

The balance of our statement provides details on the recommendations that the EEI Board of Directors recently made on not only the cleanup of TMI-2 but also on the establishment of an insurance program which will assure that cleanup operations of any future nuclear accident can be financed promptly by the electric utility industry.

EEI Actions

At its September 4, 1980 meeting, the Edison Electric Institute Board of Directors established a Task Force on Nuclear Institutional Issues to examine the institutional mechanisms now in place to deal with such issues as adequacy of property insurance, handling of early decommissioning costs, replacement power, programs for waste management, financial or other assistance in the event of large-scale nuclear accidents; to identify institutional deficiencies, if any; and to make recommendations to eliminate any deficiencies, and identify the mechanisms for accomplishing these objectives. Attached is a membership list of the group.

The Task Force decided that the first order of its business should be to investigate plausible options regarding the financial requirements of cleaning up TMI-2 and providing greater property insurance to cover the cost of any future accident.

Industry's Property Insurance Proposal

The projected expense of cleaning up TMI-2 and returning it to service has made it clear that the amount of nuclear property insurance presently available is inadequate. Cost inflation has caused the maximum property insurance coverage currently available to lag far behind the property values at risk at many multi-unit and some single-unit nuclear sites.

Responding to these concerns, the Edison Electric Institute early this year organized a Task Force on Nuclear Property Insurance to explore possible approaches for providing additional property insurance. The Task Force developed a proposal, the Excess Program, which establishes a new $500 million layer of property insurance coverage to meet losses in excess of $500 million. Of this new layer, $300 million will be provided by the participating utilities, through a combination of current premium and retrospective premium adjustments. The remaining $200 million will be sought from commercial sources in the form of excess insurance or reinsurance of the program. Increases in this coverage are contemplated for the future.

The current program, once fully implemented, will make available aggregate nuclear property and decontamination insurance coverge of $1 billion. The present property insurers offer, or are expected to offer, policy coverages of $450 million (as of August 1, 1981 in the case of Nuclear Mutual Limited, and January 1, 1982 in the case of the nuclear insurance pools). The "gap" between these coverages and the coverage provided by the Excess Program, designed to permit expansion of the underlying policies, would initially be a self-insured retention for each participant.

Nuclear Electric Insurance Limited (NEIL), which currently provides insurance for replacement power costs, will provide the insurance contemplated under the Excess Program, as it offers the advantage of being an ongoing entity, thus avoiding organizational delays and permitting efficiencies in management. The utilization of NEIL affords the additional advantage of working with a utility-owned insurance company with a broad membership base whose operations are, through recent applications, familiar to state public service commissions.

It is not anticipated that all of the $500 million in excess coverage will be available at inception, since time will be required both for some potential utility participants to obtain needed approvals and to secure insurance participation from commercial sources. To obtain reasonable spread of risk, NEIL will begin to provide insurance under the Excess Program only after it receives firm participation commitments from utilities whose aggregate obligation for retrospective premium adjustments is at least $100 million. NEIL will establish initial coverage at the sum of this $100 million plus any commercial insurance which has then been obtained. Coverage will be increased on a bi-monthly basis as additional participants' retrospective premium adjustment obligations are committed or additional commercial insurance is secured. The policy period will run for one year from the date so selected.

At the present time, NEIL has received commitments from utilities, which in some instances are subject to regulatory approval, which are in excess of $100 million. In addition, NEIL has also obtained commitments of $20 million from commercial insurance sources. As a consequence, we expect the Excess Program to be initiated shortly with insurance coverage of between $125 to $150 million to meet losses in excess of $500 million.

The insurance program is open to all United States electric utilities. The amount of the premium will be set on a site basis with premium differentials at least initially limited to those resulting from differences in values insured. Premiums for operating plants will range from about $850,000 to about $1,450,000 per nuclear site insured with higher premiums as plant values approach and exceed $2 billion. The amount of retrospective premium adjustment which may be called from time to time is limited to 7.5 times the annual premium.

The Excess Program has received strong support from the electric utility industry and the Institute is confident that this program will provide adequate coverage so that insured utilities can cope financially with the property consequences of any future accident.

Industry Participation Regarding TMI-2 Cleanup

The Task Force prepared recommendations to the EEI Board for discussion in its meeting in April of this year. Central to the Task Force's analysis of the TMI-2 cleanup situation, which the EEI Board supported, was a conclusion that not only the ratepayers of General Public Utilities, the States of Pennsylvania and New Jersey, and the Federal Government have a stake in the cleanup of TMI-2, but the electric utility industry also has a vital interest in the situation, and consequently all the interested parties, including the electric utility industry, should be called upon to participate financially. The reasons for utility participation are presented in the Task Force report and discussed previously in this statement.

This "cost-sharing" principle which the EEI Board supports, also has received support from those who have investigated the problem of assuring the prompt and effective cleanup of TMI-2. Governor Dick Thornburgh of Pennsylvania, in a July 9, 1981 Policy Statement on the cleanup of TMI-2, called upon the Federal Government, the nuclear industry, the States of Pennsylvania and New Jersey and the owners of TMI-2 to contribute a "fair share" to the cleanup costs. More recently the U.S. General Accounting Office, in a report to the Congress entitled, Greater Commitment Needed to Solve Continuing Problems at Three Mile Island, August 26, 1981, stated, "we believe a shared approach to funding the TMI-2 cleanup is fundamental..." Like others, GAO identified the Federal Government, utilities, Pennsylvania and New Jersey, and the owners of TMI-2 as the appropriate parties to share in the cleanup costs.

At its September 10, 1981 meeting, the EEI Board of Directors recommended that the electric utilitiy industry provide $32 million a year for a period of six years ($192 million total) for the funding of TMI-2 cleanup, allocated as follows:

1. $16 million a year to be provided by the electric utility industry as a whole.
2. $16 million a year to be provided as a surcharge, per MWe capacity of nuclear power plants, by electric utilities with operating licenses or construction permits.

We are encouraged and support the efforts of Governor Thornburgh of Pennsylvania to elicit the financial participation of other parties in the cleanup, but the EEI proposal is not contingent upon the participation of others, including the Federal Government. The EEI proposal, however, is for a fixed utility commitment of $192 million. We do not recommend that the utility industry bear any responsibility for an "open-ended" commitment for the TMI-2 cleanup project.

The Institute also believes that the prompt restart of TMI-1 is an essential element in the overall plan to solve the TMI-2 cleanup issue. With TMI-1 back in service, the financial health of the General Public Utilities Corporation will be significantly improved and strengthen GPU's ability to responsibly and significantly participate in the "cost-sharing" approach to the financing cleanup. The financial significance of restarting TMI is documented by the recent GAO report, previously referred to, which states that an analysis shows, "... that the average annual requirement attributable to not restarting the undamaged TMI-1 unit was nearly $421 million."

Federal Government Participation

While EEI does not recommend conditioning the utility industry's contribution to the TMI-2 cleanup upon the financial participation by the Federal Government, the Institute does believe that the Federal Government should participate because information of significant value to the Federal Government in its role as regulator of nuclear power will be derived through the cleanup of TMI-2. Furthermore, the cleanup of TMI-2 is necessary if nuclear power is to remain a viable option for the production of electricity -- an objective which the Federal Government has promoted since the passage of the 1954 Atomic Energy Act. One of the purposes of that Act was to provide for "a program of conducting, assisting, and fostering research and development in order to encourage maximum scientific and industrial progress". Another purpose calls for "a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public." These objectives have certainly been reinforced by the recent nuclear policy statement of the current Administration. In announcing the policy President Reagan stated, "One of the best potential sources of new electrical energy supply in the coming decades is nuclear power."

The Federal Government was the primary promoter of a nuclear power industry as a national goal to increase our domestic energy resource base. As stated in the Department of Energy document entitled Federal Support for Nuclear Power: Reactor Design and Fuel Cycle, dated February 1981, the Federal Government spent $12.8 billion in 1979 dollars over the period from 1950 to 1979, to encourage the commercial use of nuclear power. Unfortunately, the Three-Mile Island accident demonstrated that neither the efforts of the Federal Government nor the electric utility industry's efforts were sufficient to avoid the loss that the accident caused. Thus, both have an underlying responsibility to learn from the Three-Mile Island accident experience and to assist in the efforts of decontaminating this facility. The utility industry will provide its fair share of the financing if Congress will assist. The utility action is not predicated on any specific contribution of the Federal Government but we agree with the position of Governor Thornburgh and the General Accounting Office that the Federal Government has a responsibility to share in this effort.

Important research and development values will be derived directly from executing the TMI-2 cleanup effort. Information will be developed on not only the cause of the accident, but the nature and extent of the damage and how it might be mitigated in the future. The cleanup effort will also demonstrate exactly how cleanup must be accomplished and the sort of problems that must be anticipated in any such effort in the future. Thus, R&D value is not some sort of pure research or generic exercise that can be performed separately from the cleanup effort. The most critical value is what is learned in achieving the cleanup, the problems anticipated, the problems discovered that were not anticipated, and the various approaches used to solve such problems. While there may be some pure research efforts that could be conducted separately from the cleanup, the real value is in cleanup itself.

Summary and Conclusion

The prompt and effective cleanup of TMI-2 is in the national interest. This dictates that the Federal Government, the States of Pennsylvania and New Jersey, the owners of TMI-2 and the nuclear industry should participate in a "cost-sharing" manner in funding the cleanup. The Edison Electric Institute has recommended to the electric utility industry that its fair share be $192 million. The Institute will work diligently to implement its recommendation. The "cost-sharing" program suggested by Governor Thornburgh of Pennsylvania seems an equitable approach to the solution and the Institute supports this recommendation. We also urge the prompt restart of TMI-1 as a necessary element in the cleanup program.

While the implementation of a program along the lines suggested by Governor Thornburgh should result in the successful cleanup of TMI-2, we must also develop a mechanism to deal with any future accident so that a prolonged negotiation, such has been the case with TMI-2, is not required to provide cleanup funding. To this end, the Edison Electric Institute has supported the development of an Excess

Property Insurance Program, which we are confident will provide $1 billion nuclear property coverage in the immediate future, with prospects of futher increases in this coverage. We believe that this program responds to the second issue resulting from the TMI-2 accident.

This twin approach of a "cost-sharing" program for TMI-2 cleanup and the development of an adequate property insurance program is preferable to other approaches which have been suggested.

Senator HEINZ. I have just a couple of brief questions regarding the cost sharing proposal, and I guess the first thing I would say is I think what the Edison Electric Institute has done is commendable in the extreme. I think it is a magnificent demonstration of the American enterprise system remains capable of rising to the very considerable challenges, and there is such a thing of latent self interest and I really do commend you and all the members of your group for what you are attempting to do and I hope you will be successful in doing it.

Having said that I do want to ask you some questions about the ability to follow through on what I know is a good faith commitment, and specifically on the 192 which you described a moment ago. It is my understanding that the commitment you are talking about would include contributions from publicly owned utilities as well as your own members, is that correct?

Mr. AUSTIN. This figure, in other words when we figure up the kilowatt hour cost for all the utilities, it would include everybody. But naturally as you know we can't speak for them. We recommended that this is what we finally worked through with you and your staff and everybody else. How could we pass something that equitably distributes this?

Senator HEINZ. At this point do you have any assurances that the publicly owned utilities are willing to go along?

Mr. AUSTIN. No, sir, in fact they have had a couple of resolutions that said they would not. I'm working on it, but it doesn't mean I'm going to succeed.

Senator HEINZ. I understand. Your intention is not to take no for an answer.

Mr. AUSTIN. When I first started this industry I wasn't much further along either.

Senator HEINZ. Regarding your own members as well as the publicly owned utilities, let's assume that somehow you do decide to find a way to proceed with these contributions. Is there some danger of stockholder suits to prevent such contributions as specifically on grounds that the money should go to the stockholders? And particularly the publicly owned utilities, wouldn't they be prone to consumer group suits on similar grounds?

Mr. AUSTIN. We think they have to have some congressional action.

Senator HEINZ. So you feel what we are going to have to do at least as a minimum is to pass the facilitating legislation.

Mr. **Austin**. That's right. And let me make that clear. We are not talking about facilitating legislation that imposes what the public utility commissions will do, but legislation that puts it on the company.

Senator **Heinz**. How close are you getting, or have you determined a formula under which your members would contribute beyond the 16 times 6 times 2?

Mr. **Austin**. You take the $16 million a year and divide it by all the kilowatt hours in the United States and you get a kilowatt hour cost. We're trying to find when there's a nuclear plan under construction, so we're talking about the ones under construction and in operation which share the other $16 million. As you know, some plants have been cancelled. We're working on that now.

Senator **Heinz**. I'm going to yield to Senator Simpson who is really the expert on insurance matters, but I thank you.

Senator **Simpson**. Your testimony describes these efforts of the electric utility in the insurance industries to increase this onsite property insurance protection up to $1 billion. When do you expect that that $1 billion might be in place? And do you believe that amount of protection is really sufficient to deal with property damage that might be associated with any future nuclear accident?

Mr. **Nexon**. Well the first part, as I've already indicated, we would begin to have some of the coverage in place next month. And we would expect to reach our one-half million dollar target, I don't think it's too optimistic to say, in the first half of next year. We don't regard that as the end. As I have indicated we would anticipate growing. We have a record of achieving growth.

Now with respect to the adequacy of $1 billion, it would certainly be sufficient to cover the major public interest and making sure that decontamination takes place. Also, there have been some comments at this table where we could have another TMI accident and the cleanup costs might be materially below $1 billion. I do want to say $1 billion is a very large step forward over where we have been, and that the plan of organization we have, is steady increases in that amount. I said I would explain what I thought on the basis of a prior record, that that was a reasonable prediction.

Back in the 1970's the amount of property insurance available was $100 million per site. Over the last several years an industry mutual has raised its coverage to $450 million, and the commercial insurance companies are up to $375. We will be, I'm sure, that $450 million by January 1, 1982. So there is big progress in that area.

We started our insurance plan for replacement cost insurance, that first policy year began September 15, 1981, the coverage limit was $150 million. For the policy year beginning September 15, 1982, the policy limit is $180 million. So we know how to make progress in this area.

Senator **Simpson**. You mentioned your preference, of course, is the private insurance program as opposed to the Federal insurance program. What would be your objections, if you have any, to a Federal requirement that a specified amount of private financial coverage of property damage would be provided for nuclear power plants in order to insure that these problems of the subject of this hearing do not recur? Do you have any objection to the Federal requirement, setting a specific amount of private financial coverage?

Mr. NEXON. There is an inflexibility to amounts set which I think creates very serious problems for us. On the other hand, the industry has a technical legal responsibility right now to buy as much insurance as it can get. This is an obligation arriving largely out of its corporate mortgages. Now I think a more appropriate course and a flexible one, and one more calculated to serve the public interest would be to see how fast we can get up to levels that the Congress regards as appropriate and then have only if there is——

Senator SIMPSON. You testified in your remarks that this EEI proposal for utility contribution is not contingent upon the participation of others. And that came out this morning and is verified again. The fixed amount is $192 million. And currently you still have some costs. But how firm are those individual utility commitments to make those contributions, and what would be the impact on those commitments and efforts to collect and participate if there were some, if there was an effort to increase the contributions beyond the $192 million?

Mr. AUSTIN. Well, our industry is composed of about 250 companies. Some of them are small and some of them are large and everyone has a vote in the association. The board is composed of 45 members. And there has been, well we've had numerous discussions of this in EEI board meetings, but in Kansas City just last month the Governor came out and made his speech to the board, and there was some discussion after he left, and there was no negative vote cast in that group. I cannot swear to you today, sir, that some people didn't sit there and say nothing. And with a fractured industry like this, the leaders of this industry feel that nothing is being done, so we felt we ought to do it, but cap it. Have one commitment, and as Senator McClure was talking about, any cost overruns or anything like that then the Commission is going to have to handle it.

But to make this, to get this straight $192 million I think we'll have to have some legislation through Congress.

Senator SIMPSON. You do feel that that is quite necessary, is that your view that there is a need for legislation at this time to put this cost sharing approach into effect in whatever we might arrive at?

Mr. AUSTIN. Yes, and you'll find some mavericks fighting it, but you'll find most of us with you.

Senator SIMPSON. And that will help you facilitate the fulfillment of the commitment from the people of those in your industry?

Mr. AUSTIN. That's right. We think this is in our own interest not only from the R. & D. point of view. I had another investment banking concern figured up, just what savings it would take if we got, I believe Governor Thornburgh said the confidence cost. You know as well as I electric utilities run on borrowed money all the time. One of our companies just paid $17.7 percent for bonds, but if just the $10 million in financing that we had in financing this year, if we saved only two-tenths of 1 percent because we got the confidence of the investors up, the customers in the long run are going to save money because the interest costs are coming down more than what this cost would go up.

Senator SIMPSON. I would think and you've indicated that Federal research and development effort is going to be a great interest and support and assistance for the industry when they participate, and I'm sure that is a necessary element of the commitment from the various organizations that you represent, is it not?

Mr. AUSTIN. We are prepared regardless.

Senator SIMPSON. Yes, you're not tied to the action of others, I understand that. But it should be an attractive reason for them to come in.

One other question that came up this morning, do you feel that other elements of the nuclear industry such as the nuclear reactor vendors should be involved in this contribution to cleanup costs?

Mr. AUSTIN. We would be happy to share this $192 million with anybody, but I'd have to let the vendors talk for themselves.

Senator SIMPSON. Obviously there will be an impact on all the electrical utilities including those who don't presently involve themselves with the nuclear power unless we have an expeditious resolvement of this, all of them are going to continue in the pattern of uncertainty, isn't that correct?

Mr. AUSTIN. That's correct.

Investors aren't as sophisticated as some people think they are. When an industry is in trouble, they give it a wide birth.

Senator SIMPSON. Is your group looking at a full indemnity or willingness to remain deeply committed and therefore quite alert by having not full indemnity?

Mr. AUSTIN. I don't quite understand.

Senator SIMPSON. We can talk about that later. I'm talking about full indemnification under insurance like, OK, the figures are now up to $1.4 billion, and you have an accident, and the revolving firm may cover that.

Mr. AUSTIN. As an industry we want to start out with this billion dollars but have that go up as more reactors come on line. So whatever might happen in the future, we would have the insurance in place to cover it.

Senator SIMPSON. But I'm talking about full indemnity. I'm talking about full coverage. You know, like you get into other areas of insurance.

Mr. NEXON. We're talking about insurance essentially without major deductibles, except that we've left a $50 million gap between the $450 million you can buy today and the beginning of our new $500 million. We think that gap will be filled quite promptly. But that is the only significant item of coinsurance on the first billion dollars of loss.

Senator SIMPSON. We might go into that at some future time. All right, thank you.

Senator HEINZ. Thank you, Gentlemen. We appreciate your being here. I'm going to submit a few questions to you for the record. Thank you very much.

I'd like Mayor Reid to come forward and I'd also like Mr. Kuhns to come forward, and I would ask Mayor Reid to testify first.

STATEMENT OF HON. ROBERT REID, MAYOR, MIDDLETOWN, PA.

Mr. REID. Mr. Chairman, it seems as though the ratepayer is the devil in dealing with the situation at Three Mile Island, and from all the testimony I've heard today so far, it seems as though we're attacking the ratepayer instead of the real problem that exists at Three Mile Island.

I want to thank you for allowing me to express my views on the cleanup of Three Mile Island and for allowing me to make statements on S. 1606.

My community is 3 miles from the Three Mile Island nuclear generating plant, where the worst commercial nuclear accident took place in March 1979.

The concern of the people living in the area is with the cleanup of the nuclear plant. The cost of the cleanup of the plant will reach the amount of $1 billion. The insurance coverage for the cleanup is far from that amount.

A number of proposals have been offered to finance the cleanup of Three Mile Island. They are commendable, but I see a problem with the proposals. What will happen if agencies committed to financing the cleanup cannot meet their obligations because of tight budgets? Would this problem slow down and hamper the cleanup process?

I feel the Federal Government should make a guaranteed loan of $1 billion to General Public Utilities for the purpose of cleaning up Three Mile Island. I also feel that this loan should be repaid by GPU and that future rate increases to GPU customers should not include the repayment of this loan.

If our area had been struck by a tornado, flood, or hurricane, the Government would have come to our aid because it would have been concerned with the health and welfare of the people.

It's true none of these natural disasters took place, but we could be faced with a health problem because the plant is now doing something it was not designed to do, storing approximately one-half million gallons of highly radioactive water.

I think we can look at it from another viewpoint. The Congress of the United States has control of all forms of nuclear energy, and a Federal Regulatory Agency has the responsibility of licensing and supervising nuclear plants. I believe that the Government should be in the forefront should anything happen at a nuclear plant. I also believe the Government has been pushing nuclear energy as the source of energy for the future, so again the Federal Government should be in the forefront if anything happens at a nuclear powerplant.

I am not asking the Federal Government to "bail out" GPU, but only to "bail out" the people living in my area. When the Chrysler Corp., New York City, and the Lockheed Corp. were in financial trouble, the Federal Government probably had a good reason for coming to their aid financially. Then again Chrysler Corp. didn't lower the price of their automobiles even with the loan the Government gave them.

It is also common knowledge that throughout history the United States has been generous to many foreign countries when they needed financial assistance. When the Love Canal problem took place in New York State, I was pleased to see the Federal Government come to the aid of the people living in that area, and I was pleased to see the Federal Government comt to the aid of the people living near Mount. St. Helens in the State of Washington.

The Preamble to the Constitution of the United States states that one of the purposes of the Constitution is to "promote the general welfare," and to me, coming to the aid of the people living in central Pennsylvania is promoting the general welfare.

S. 1606 is a very important bill because it will give assurances that financial assistance will be present should another accident take place at another nuclear plant. I don't want to sound pessimistic, but there are going to be accidents at other nuclear plants in the United States in future years. Anytime you deal with man-made objects there is always the possibility that something will go wrong. And there is a great chance for human error.

The Price-Anderson Act as it is written today does not provide enough funds for cleanup after a nuclear accident. The situation at Three Mile Island is discouraging because of limited financing guaranteed by the Price-Anderson Act.

Certain actions had to be discontinued at Three Mile Island because of lack of funds and many important technicians had to be terminated.

In S. 1606, highly technical projects at Three Mile Island would be continuing and the length of time for the cleanup of the island would be shortened. As the plant stands today the people living in the area could be faced with a greater catastrophe than they faced in March 1979; and I also added here, the only fault I find with S. 1606 is that it does not provide homeowner insurance against exposure of radiation and I think this is something you should look at. Because if we were going to have nuclear plants we better make sure we have some kind of insurance to cover people living in the vicinity of those plants.

Thank you.

Senator HEINZ. Mayor Reid, thank you. I want to commend you for the very courageous, steadfast leadership you have provided to the citizens in Middletown through some very difficult times.

I've had occasion, as you will recollect, to visit Middletown. You were kind to show me through the streets, into the homes of many of your constituents and mine, and I thought that you were just extraordinary in the way that you maintained people, the sense that there was some stability in very difficult times and I know it wasn't easy for you. You've done a very good job of coming down here and presenting some extremely eloquent testimony and also good parallels regarding how the Federal Government rushes to help others when they are the victim of natural disasters, or the case of Chrysler, a not so natural disaster. I didn't happen to vote for Chrysler, but apparently a majority of my colleagues did.

I noted your comment for improvement in S. 1606 which we will look carefully at.

I wanted to ask you, although you made some specific suggestions, namely a straight guaranteed loan to GPU of $1 billion and the conditions under which the loan should be repaid, do you believe that S. 1606 will accomplish substantially what you would like to see accomplished?

Mr. **Reid**. Yes. I think what we really have to consider is the cleanup now. And I'm tired of hearing people argue and discuss. Everyday when I walk out of my back door the first thing I hear are those four cooling towers, and I know that things just aren't right down there. I know Mr. Kuhns will agree with me, he would like to get that place cleaned up as quickly as possible.

Someone mentioned about a time. Dr. Palladino said he wouldn't paint a picture of it, but I will. It is a time bomb and it's ticking and it's going to go off and I really think we're going to face something greater than we faced in March of 1979 if we don't clean it up now.

Now people may sit around and might talk of whose responsibility is it to clean it up, let's clean it up and then we'll talk about who pays later. That's what we have to do. We have to get that place cleaned up.

The people who generally say why should the Federal Government pay for it, you might live 2,000 miles away from it. There might someday be a problem in your own area where you might need some help, and we do need help.

Senator **Simpson**. Indeed you do need help and that is the purpose of the Heinz legislation, and in the various categories of blending support and assistance I think we'll come up with something where there will be many participants other than the Federal Government. I understand your frustration. I sense that. Your testimony is in every sense, it expresses that. That a guaranteed loan of $1 billion to GPU, and then stating that that should be repaid by GPU but that future rate increases to GPU customers, that is ratepayers, does not include the repayment of the loan, leaves us hanging not on the horns of dilemna but a unicorn.

Thank you very much.

Senator **Heinz**. Mayor Reid, we know you have to run. We hope you catch your plane and we hope that it doesn't circle all those smokestacks over Three Mile Island.

Mr. Kuhns, please introduce your associates.

Mr. **Kuhns**. On my far left is Bob Arnold, our head man at Three Mile Island. On my immediate left, Bud Cherry, vice president of planning. And on my right John Grahm, vice president and treasurer. All of us will be available for your questions. We did submit testimony in written form with all kinds of attachments and appendices, and I will respectfully request that they be made part of the record, and I would not burden you now with making you go through that line by line and page by page. But if I may make a few points and then invite your questions.

STATEMENT OF WILLIAM G. KUHNS, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, GENERAL PUBLIC UTILITIES CORP., PARSIPPANY, N.J., ACCOMPANIED BY BOB ARNOLD, GPU, THREE MILE ISLAND; BUD CHERRY, VICE PRESIDENT OF PLANNING, GPU; AND JOHN GRAHM, VICE PRESIDENT AND TREASURER, GPU

Mr. **Kuhns**. It's perfectly clear that the overriding consideration is that TMI must be cleaned up. There is a health and safety problem. One can discuss how near term that problem is and we're prepared to comment on that, but it is clear to all there is no disagreement that the island must be cleaned up and the sooner the better for all.

There are three stages of the cleanup basically, from here on, to get rid of the decontaminated water, some 700,000 or 800,000 gallons that is underway with this system which is the process today at something over 100,000 gallons of that water.

Second, the core removal, and third the decontamination of the entire building.

The task is unprecedented, if only in magnitude, but it is doable. It's going to take an enormous amount of time and money. Time to a great extent because of the nonproductive environment in which workers must function, and money of course related to that time. The $1 billion estimate we think is a good estimate. We referred earlier to the fact that there had been a $400 million estimate. Move it up to $1 billion and you quite properly suggested what is the next move. We've tested this estimate several times. We think it's a pretty good estimate.

We know included in this effort of course are the opportunities to derive significant nuclear research and development. Our estimate is that this task could reduce otherwise needed Federal nuclear R. & D. efforts by something between $300 and $500 million, so we think a strong role for the Federal Government is justified on that basis.

We need a partnership. Chairman McClure indicated in his opening remarks that concept and we endorse that. We think it is essential. We don't think it will happen without a cost-sharing mechanism to accomplish this.

Why can't the company handle it? Why can't the customers handle it? That has been talked about. The customers to date have seen a cost of some $240 million, and stockholders have had their dividends terminated aggregating some $230 million, an annual rate of evidence exclusions if you will of about $100 million as a result of that discontinuance, the market price dropped from $17 a share before the accident to about $5 today. There are 60 million shares outstanding. Over $700 million in market value.

We believe strongly and I think there is a consensus building included in your good legislation proposed, Senator Heinz, that the benefits and the responsibilities of others must be recognized in this package that we must come up with to get the job done.

One of the factors that gets ignored sometimes when we talk about it is the fact that we are running a utility company in the process while we're trying to deal with TMI. That is an important consideration so that the revenues, we're about a $2 billion revenue company, and some say that's a lot of money, why don't you take that and spend it on the cleanup and get this thing done. Those revenues are going to meet our service responsibilities. We've cut way back on that to a bare minimum. Servicing the non-TMI capital and providing service to our customers, plus servicing the capital costs of TMI which costs go on even though ratemaking deprives us of the revenues to service that.

We're eating up all the cash we have available and there is literally nothing left. Our insurance estimated to be $90 million at the end of this year, is all we have to dedicate to the cleanup at this point, so we must put in place a funding program and provide a timely and predictable conclusion of this task.

Return of unit 1 is important to this activity as we heard earlier. We heard from Chairman Palladino about the prospects in that regard. The NRC originally scheduled restart hearings the end of February 1980, with a decision expected in September of 1980. Those hearings actually began in October of 1980 and now we're expecting a decision probably not much before late December of this year.

The Thornburgh plan has been discussed in detail and we applaud it. It is a most thoughtful, we think, responsive suggestion from Governor Thornburgh. The EEI response to that you've just had described and we think that is a forthright commitment from the industry, which is again the self-interest involved in their participation.

The President's comments on October 9 and followup with the letter from Counselor Meese which we heard today endorses the cost-sharing principle and indicates consideration of the Federal funds to assist in the cleanup. All of that is very gratifying.

Repeatedly the subject of bail out comes out and it is a relevant consideration and we address it in our testimony. We address it in all of our discussions. This is not a case of fiscal mismanagement. It is not a case of product obsolescence or inability to compete. We are unable also as a utility to take the conventional steps to deal with this kind of financial crisis that a nonfranchised company could take. We can't stop for instance selling our service at less than cost. We just can't stop doing that because we have this most essential service. We can't sell off pieces of equipment, close down our unprofitable divisions and take the normal kind of free enterprise responses to a catastrophe like this.

I think Governor Thornburgh's point about bail out was very well put. We're not talking here about bailing out GPU in terms of restoring its capability. We're talking about assisting with the cleanup. We're talking about a health and safety problem which stops far short of what is needed and we will be looking for ratemaking to provide what is needed to restore the financial viability. The ratemaking problem has gotten a lot of discussion and it's important to put it in perspective.

If we obtain the increases that we have now requested——

Senator **Heinz**. Excuse me, could you wait just about 30 seconds.

[Pause.]

Senator **Heinz**. Please proceed.

Mr. **Kuhns**. Thank you.

I've talked about the ratemaking. You've heard a lot about it today. It's been suggested you lay this on the customer and all of us should go home and the problem would be solved. I think it is important to remind everyone the rates of our customers have gone up significantly since the accident. I forget what we have asked for in our latest filings. The rates we've got have doubled in Pennsylvania and New Jersey, and something less than that for Pennsylvania Electric Co. So you're getting increments here that in and of themselves don't seem like much, but when you aggregate them and lay them on and then get into the percent of disposable income the Senator was directing your attention to earlier, you find a point there at which one can say fairly that the customer has borne the burden and will be expected to bear more burdens as time progresses.

Perhaps more significantly than that in terms, in justifying Federal involvement is the element of responsibility and benefits if you will, to the Federal Government. Mention was made earlier on more than one occasion that the Federal Government really put the industry in the nuclear business. Not kicking and screaming in any sense, but the atoms-for-peace program, the Eisenhower years, stimulating the introduction of nuclear power into our energy picture. The encouragement by the Federal Government of the technology and subsequent to that throughout the period of development of nuclear power the heavy involvement by the Federal Government in the nuclear regulation.

I think it has really a historic and unique involvement in nuclear power in this country. So we recognize those matters, I think the role of the Federal Government as further identified with direct R. & D. benefits, we come up with a justification that we find compelling.

In summary, Mr. Chairman, we think it's clear that the system is not working. It hasn't worked well for 2½ years since the accident, and something has to be done. We are at a total impasse and we must move. Everyone is being hurt. The American public generally, the ratepayer. I referenced earlier to the fact that ratepayers throughout this country are paying a premium through their electric rates for the debt securities that their companies are having to sell. Something must be done.

We regard Governor Thornburgh's plan as an effective approach to deal with the TMI problem and to develop an equitable cost-sharing mechanism. In addition the thoughtful and constructive legislation introduced by you, Mr. Chairman, is an invaluable step in the total effort of developing a TMI funding program.

Again we appreciate the opportunity to appear. We will be happy to respond to any questions you may have.

[The prepared statement of Mr. Kuhns follows:]

TESTIMONY OF WILLIAM G. KUHNS
CHAIRMAN AND CHIEF EXECUTIVE OFFICER
OF
GENERAL PUBLIC UTILITIES CORPORATION

I am Chairman and chief executive officer of General Public Utilities Corporation ("GPU"). I hold identical positions with each of the principal GPU System Companies, namely, Metropolitan Edison Company ("Met-Ed"), Pennsylvania Electric Company ("Penelec"), Jersey Central Power & Light Company ("Jersey Central"), and GPU Service Corporation ("GPUSC"). My business address is 100 Interpace Parkway, Parsippany, New Jersey. A statement of my educational background and business experience is annexed as Appendix A. A description of the GPU System, our planning and construction of generation and transmission facilities, and our involvement in the development of nuclear energy is presented in Appendix B.

1.0 Introduction

It has now been more than 2 1/2 years since the accident at Three Mile Island. In this period, only limited progress has been made on its cleanup. These limitations have been caused both by insufficient funding and by the lack of timely regulatory support from the NRC. Once funding constraints are overcome, it will be essential that more aggressive nuclear regulatory action be taken. These matters have been addressed in a number of reports, including the 1980 and 1981 reports of the Comptroller General and the 1980 report of the Subcommittee on Nuclear Regulation of the U.S. Senate Committee on Public Works and the Environment and I shall not spend this Committee's time in reviewing these reports.

The prompt cleanup of Three Mile Island is clearly in the interest of the people in Pennsylvania and New Jersey, as well as the nation. While the unit is presently in a safe and stable condition, the ingredients of a potentially very serious situation still exist at the island. This condition will remain until the damaged fuel core is removed, the plant is cleaned up, and radioactive wastes have been removed from the island. The adverse impact that would accompany the deterioration of the current status of Three Mile Island (TMI) would be significant to the residents of the area and to those areas downstream from the plant on the Susquehanna River. It would also adversely affect any utility now operating or contemplating the operation of a nuclear power plant, and could ultimately require the involvement of resources of the federal government.

There is no controversy over the judgment that Three Mile Island must be cleaned up as soon as possible. However, because of the current absence of a funding program for the cleanup, current efforts accomplish little more than the maintenance of the status quo. Without a major infusion of additional funds, there is no possibility that the cleanup can be completed.

There is an absolute need to develop a funding approach which assures timely actions at TMI. Prudence requires us to husband the remaining insurance funds (about $90 million) until an adequate source of funds is in place. Because of the urgency of these matters, we welcome the opportunity to discuss our view of the challenge of developing a program which ensures the expeditious cleanup of TMI.

2.0 Magnitude of the Problem

In August of this year we reevaluated the costs of our cleanup program. Based on this evaluation, which has had the benefit of numerous entries into the containment building, full cleanup of the facility can be accomplished over the next five to six years at a cost of about $760 million. Considering the $274 million which will have been spent by the end of this year - most of which has been devoted to bringing the unit into a safe and stable condition and maintaining it in that posture - the total cost will be about $1 billion.

The job can be viewed in 3 stages: 1) removal and processing of the 700,000 gallons of contaminated water from the building and piping systems which has been initiated; 2) removal of the damaged fuel core by 1985; and 3) decontamination of the entire interior of the contaminated building.

Despite the fact that proven technology is available to accomplish the cleanup, the task is unprecedented in its magnitude. Thousands of skilled workers, who will have to operate under severely restricted conditions, will be involved. Actions taken to protect each worker's health and safety will vastly reduce their normal productivity, thus increasing labor costs. Additionally, construction or fabrication of several new facilities and equipment will be required.

These efforts, however, should not be viewed narrowly as actions to cleanup the facility but as opportunities to derive significant nuclear research and development values. Specifically, the experience gained in cleanup, waste disposal and damaged fuel examination will assist the ability of the nuclear industry to manage its operations in a safer manner and to assure that, should another accident occur at another facility, the industry will be better able to cleanup and decontaminate that facility in an expeditious manner. Not all these values to be derived have or can be quantified, however, our initial estimate of the value of fuel and material examination alone could reduce otherwise required federal nuclear R&D efforts by as much as $300 million. A detailed discussion of the research and development values at TMI is presented in Appendix C.

3.0 Financial Impact of the Accident

It was observed by the WALL STREET JOURNAL, that "The really devastating fallout was to everyone's surprise - financial ...." Just before the TMI-2 accident, the GPU System was soundly capitalized. Officials of the Securities and Exchange Commission so testified at the hearing before the Senate Subcommittee on Nuclear Regulation of the Senate Committee on the Environment and Public Works and at a hearing before the New Jersey Board of Public Utilities (NJBPU). This was also the view expressed by the General Accounting Office and the other organizations who have investigated GPU since the accident.

3.1 Financial Impact on the Company

Our present financial posture is vastly different from what it was immediately prior to the accident. Following the accident, we began to experience a severe cash drain due to the unreimbursed purchase of replacement power. For more than a year after the accident, we were not permitted by the Pennsylvania Public Utilities Commission (PaPUC) and NJBPU to fully recover those costs currently, although subsequent actions by the PaPUC and NJBPU did permit such recovery.

Promptly after the accident, our base rates were also reduced by amounts equivalent to our operating and capital costs associated with TMI-2. About a year later, the operating and capital costs associated with TMI-1 were eliminated from our base rates. (See Appendix D for more details on post accident ratemaking).

The fact that our rates make no provision for these costs does not mean that these costs do not exist. We still meet the payroll for workers at TMI-1 and TMI-2; we still must pay for materials and supplies; we still must pay interest on the bond and debenture capital invested in those stations. Only a limited amount of these costs have been borne by insurance; the balance have been met out of the return received on our other utility capital.

To maintain solvency, we have eliminated our common stock dividend and we have cut our operating, maintenance, and construction expenditures to the absolute minimum. Our current earnings are so low (in fact, we are in a loss position) we cannot meet the various tests required to issue new securities and we have not had access to external capital markets for over two years. Our only source of cash beyond our electric revenues is the revolving credit agreement with 45 banks under which we can borrow strictly limited amounts. In summary, the costs related to TMI consume essentially all of the cash provided by regulation on non-TMI property.

In discussing the TMI-2 cleanup financial requirements, there is a tendency to ignore the on-going cash requirements associated with our continued supply of reliable electric service to the four million residents of our service area. Our ongoing cash needs remain significant despite major cutbacks in all of our programs. All electric utilities find it necessary to have almost continuous access to the long-term capital markets to finance new construction and to serve new customers. Moreover, even if growth in load did not exist, existing equipment wears out and must be replaced with new equipment at vastly higher costs; new customers need to be connected; transmission and distribution systems require reinforcement; outstanding bonds and debentures mature and must be refunded, and sinking fund payments must be made. While we do not expect to burden Congress with this problem, it is certainly a constraint with which the company and its state regulators must deal.

The total impact of the accident on GPU common shareholders has been staggering. It is important to note that two thirds of our shareholders are retired or within five years of retirement. Our stockholders have lost $230 million in cash dividends. GPU common stock now trades in the $4-5 per share range, as opposed to about $17 per share before the accident - a loss of over $700 million in market value. See Appendix E for details on the financial impact of the accident on the GPU Companies.

3.2 Financial Impact on the Customer

There is a widespread perception that the GPU System customers have been heavily burdened to date as a result of the accident. While the impact has been significant, it must be placed in perspective.

The net additional cost to the customer since the accident through September of this year is estimated to be about $240 million. This results from an increase in charges for replacement power of $610 million, but has netted against it accident related exclusions from rates of $370 million. GPU System revenues were $1.8 billion in 1980. On a system wide basis rates have increased about 50% since the accident. (See Appendix F for more details.) To the extent that the increases in charges to customers are associated with the need to purchase replacement power, such increases underscore the value to customers of nuclear generation. If, for example, instead of constructing TMI, the GPU companies had constructed oil-fired generation -- as did some neighboring electric utilities in the same time period -- the increased charges to customers would have been much greater.

4.0 The Bankruptcy Issue

The question of bankruptcy and its impact on the system and its cleanup obligations has been evaluated in detail by a number of different investigators. These include the Securities and Exchange Commission, the NJBPU, the PaPUC, Theodore Barry and Associates, Arthur Young and Co., the General Accounting Office, the Nuclear Regulatory Commission and the Department of Energy. These organizations have all stated that bankruptcy is not a desired or a viable option. This conclusion has been reached for several reasons. (See Appendix G for more details.) The institution of bankruptcy proceedings does not pay for the cleanup, nor does it reduce or eliminate the cost to supply electricity to GPU customers. In sharp contrast to other corporate situations where large debts can be wiped out through reorganization proceedings, where factories can be closed and abandoned, or where product lines can be eliminated the stark fact remains that the supply of electricity must continue, while the cleanup of Three Mile Island must be accomplished. Whether or not GPU continues to exist as an organizational entity, the costs remain. Importantly, all who have studied the situation have concluded that the institution of bankruptcy proceedings would seriously threaten the ability of GPU or any successor organization, or any of the affected parties, to proceed with the cleanup on a timely basis, and to continue reliable electric service in approximately half the land area of Pennsylvania and New Jersey.

Bankruptcy will not provide a free lunch for the four million residents of our service area, for the economy of that area, for the many taxing authorities dependent upon participation in our revenues, nor indeed for the entire country. Bankruptcy of GPU would increase the cost of capital to the entire electric utility industry. The past 12-18 months have provided time for responsible parties to determine unanimously that bankruptcy is not a solution and is, in fact, intolerable.

5.0 TMI-1 Restart

The timely restart of TMI-1 is an important ingredient in the development of a cleanup funding package and in the restoration of financial health to GPU. When returned to operation, TMI-1 will substantially reduce the need for and the cost of replacement power.

TMI-1 was returning to power after refueling when the TMI-2 accident occurred. The unit was immediately shut down and the NRC given assurance that we would not seek to restart without substantial advance notice. In July of 1979 we were ordered by the NRC to keep TMI-1 shut down until further order of the NRC.

We objected strenuously that this order was discriminatory since the NRC had permitted other similar B&W units to resume operation, after a brief shutdown.

Our objection was not to the conduct of any public hearing, but to an unfocused and protracted procedure that invited delay at every turn and gave no consideration to the economic interests of our customers. NRC scheduled the TMI-1 restart hearings to begin in February, 1980 with an NRC decision by September, 1980. However, the hearings started in October, 1980 with an NRC decision currently projected for no earlier than December, 1981. (See Appendix H)

6.0 Actions to Resolve the Problem - Cost Sharing

Governor Thornburgh of Pennsylvania has proposed a plan which apportions the remaining cost of cleanup among GPU, the federal government, all U.S. utilities and the states of Pennsylvania and New Jersey. Members of the Pennsylvania Congressional delegation have also introduced legislation which spreads the costs between local and national interests. We strongly believe that a funding program which spreads the cost of the cleanup beyond GPU customers and stockholders is justified. Had the nuclear establishment, the government, the utility industry, the vendors and the regulators, anticipated that an accident of this magnitude and cost could occur, the industry would have put an insurance program in place. We would have been a participant in such insurance and would not be faced with this problem today. The fact that both government and industry were not farsighted enough to anticipate this sort of an event is not a reason now, in retrospect, to lay the entire cost of the accident on any single entity.

We are encouraged and gratified by the efforts being undertaken by national interests regarding their respective role in cleanup funding.

At the recent Edison Electric Institute annual meeting, the Institute recommended that an annual contribution be made by every U.S. utility in an amount that equated to the 25% share identified by Governor Thornburgh ($192 million or $32 million annually).

On October 9, the Reagan Administration, too, endorsed the cost sharing principles of the Thornburgh proposal and indicated consideration of federal funds in excess of $100 million to assist in the cleanup.

In the discussions of the justification for a federal share in the cost of the TMI cleanup, the issue of federal intervention in private sector activities is consistently raised. A federal share in the cost of the TMI cleanup does not constitute a bailout of the company or its customers, but rather is a necessary and appropriate ingredient in bringing to an end the impasse that, if not resolved, will significantly affect the federal government.

It cannot be stressed strongly enough that the financial difficulties which GPU is now attempting to manage resulted from an accident and its political aftermath. These difficulties did not result from fiscal mismanagement. GPU's product, electricity, has not become outmoded. Its market hasn't disappeared. Its generation system hasn't been bested in competition with aggressive rivals, domestic or foreign. Indeed these financial difficulties are further exacerbated by a continued requirement to provide electric energy to our customers and to maintain our prospective ability to serve the areas which we have a legal obligation to serve. This legal obligation to serve eliminates our ability to employ the more traditional opportunities to cope with a financial problem, such as reducing production, closing or eliminating facilities, significantly reducing work force, etc. In a regulated industry we are also constrained in our flexibility to deal with product pricing as a part of a solution. In addition to the maintenance of service, GPU also has a legal responsibility in its stewardship of the damaged reactor at TMI-2. The cleanup of this damaged reactor exacts an additional burden for the GPU System. The magnitude of this burden was unanticipated by the company or its regulators and, indeed, was unanticipated by any of the participants in the nuclear industry.

If a cleanup funding package cannot be put in place, GPU cannot carry out its responsibilities to decontaminate Three Mile Island and, if, as a result, an insolvency occurs, all of the costs associated with the cleanup of Three Mile Island, as well as the costs associated with serving the GPU electric customers will remain. It is quite possible that, as a result of a GPU in solvency, the federal or state governments would end up with the responsibility for the cleanup.

A shared cost approach to the solution of a funding impasse should, therefore, not be considered as a bailout or as charity. The intervention of the government into a regulated utility industry is quite different from government intervention into the "private sector". The Federal Government has had an historic involvement in the development of nuclear energy and, therefore, has a significant self-interest in the resolution of TMI funding problems. A significant federal role can go a long way towards resolving the TMI problems, and, in the end, will constitute a bargain for the federal government rather than a bailout of the customers of a financially troubled utility.

7.0 Conclusions

While GPU and its contractors have the technical resources and personnel, have developed a comprehensive plan for cleanup of TMI, and have incorporated all these resources into GPU Nuclear Corporation, we are not now in the financial position to carry out these efforts beyond the cleanup of the contaminated water in the containment building. There is a clear need for prompt action in the development of a cleanup funding package. GPU's views as to the appropriate elements of a cleanup funding package, as well as its financial requirements through 1986, are discussed in Appendix J.

We have been working ever since the accident to find a solution to funding an expeditious cleanup. We believe it is imperative that an equitable sharing of the costs of the TMI accident be developed and that the funding impasse be broken. The cost of the cleanup of TMI will total approximately $1 billion or about $760 million to completion. To provide some perspective, $760 million is about 1% of the current U.S. nuclear investment. The required cleanup funding level of between $130 and $150 million a year is just slightly more than a half a mill (.05 cents) per kilowatt hour on all of the 1980 U.S. nuclear generation.

The minimization of nuclear regulatory delays and funding constraints can assure the viability of current cost estimates and could potentially result in a significant reduction in the total cleanup cost.

We believe that the government and the utility industry should all participate in the funding of the cleanup in addition to our customers and stockholders. Considerations of equity, responsibility and self-interest require sharing. We are not wed to any particular funding mechanism so long as it recognizes that we have other costs that must be borne if customers are to continue to be served reliably with reasonable rates. We believe that the plan proposed by Governor Thornburgh represents an effective approach to begin to deal with the TMI problem and to develop equitable cost sharing mechanisms. The thoughtful and constructive legislation introduced by Senator Heinz provides another approach to cost sharing and is an invaluable step in the total effort of developing a TMI funding program.

We appreciate very much this opportunity to appear before you. We hope it will be helpful to you in the performance of your legislative functions and in the development of a consensus for a shared response to the problems I have described.

Committee Questions

The 19 questions posed by the Committee and our responses to them are included as Appendix K to this testimony.

APPENDICES TO THE TESTIMONY OF

WILLIAM G. KUHNS
CHAIRMAN AND CHIEF EXECUTIVE OFFICER
OF
GENERAL PUBLIC UTILITIES CORPORATION

PRESENTED TO THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
AND TO THE
SUBCOMMITTEE ON NUCLEAR REGULATION
OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

OCTOBER 20, 1981

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(Committee Note.--Copies of Appendixes A-J and the exhibits have been placed in the files of the Committee on Energy and Natural Resources. They are available to the public during the Committee's regular business hours. Appendix K has been reprinted and is set forth in the Appendix to this volume.)

Senator **Heinz**. Thank you very much.

Let me ask you this. It's been discussed by GAO and you too on page 9 on the bankruptcy issue. An issue has arisen here in the committee on several occasions today that there is only the GPU and/or its ratepayers should bear more of the cost, or that GPU stockholders should bear more of the cost. Now under the Thornburgh cost-sharing plan some $245 million would be borne by GPU.

My first question is of that $245, how much of that would be borne by the stockholders and how much by the ratepayers?

Mr. **Kuhns**. That determination has not been made. That would be up to the PUC to develop a sharing of that burden. At the moment, I would remind you there are no dollars available to the stockholders, so first of all there was the return on the investment for the stockholder would have to be provided before any part of it could be allocated to the cleanup. That would be an important part of the ratemaking procedure on that subject.

Senator **Heinz**. Someone will probably ask you in the written questions, but I might as well do it verbally, could GPU afford to charge the shareholders' equity, that is everything below a line below current liabilities and long-term liabilities on the right hand side of the balance sheet that I'm sure you're familiar with. Could GPU afford to charge $245 million to shareholders' equity, or would you become technically insolvent if you did that?

Mr. **Kuhns**. Technically insolvent?

Senator **Heinz**. That's when the right hand side gets larger than the left hand side. [Laughter.]

Mr. **Kuhns**. I'll ask our financial man to comment on that.

Mr. **Grahm**. I think what I would say on this, all of the dollars that are now represented by the equity on our balance sheet are invested in our plant assets. We have no significant cash assets.

Senator **Heinz**. What is your book value?

Mr. **Grahm**. It's about a billion, $400 million in equity.

Senator **Heinz**. In theory, I'm not saying you have the cash laying around, but in theory you would not become insolvent if $245 million was charged to your book value.

Mr. **Grahm**. It would significantly affect our financial ratios and everything else, but the issue is, where would we get the $245 million of cash to spend on the cleanup? Unless it is given to us in our rates, we wouldn't have it.

Senator **Heinz**. Suppose the PUC says no. What do you do?

Mr. **Grahm**. We don't have the money to spend and the plant essentially sits there and I guess we would spend the money we would have to to maintain it in a safe condition.

Senator **Heinz**. Where would you get that?

Mr. **Grahm**. That money now is coming from the earnings that we are allowed on non-TMI properties, and I might say that by spending that GPU right now is in a loss position.

Senator **Heinz**. And what you're doing is you're spending your earnings and appreciation from other operations? How much does that amount to?

Mr. **Grahm**. Well let me see if I can put it this way. We get money from the investments that we've made in utility poles and transformers and coal plants and all the other things. That money is used to maintain the electric system and to make those investments that we have to continue to make to provide adequate service.

Senator HEINZ. I understand that.

Mr. GRAHM. Once that's done and once we've spent the money that we have to to keep the plant in a safe condition, there is nothing left.

Senator HEINZ. Let me rephrase my question. You get a cash flow from your other operations.

Mr. GRAHM. Yes, sir.

Senator HEINZ. That cash flow is composed of two things. It is composed of earnings and it is composed of sheltered cash flow, usually sheltered by depreciation.

Mr. GRAHM. Depreciation and deferred taxes and things like that.

Senator HEINZ. My question is, how much is that each year?

Mr. GRAHM. I would say that is in the range of $300 million which is very close to the amount we have to spend on construction for the electric system unrelated to Three Mile Island.

Senator HEINZ. Were you not to spend $300 million a year on that system, what would happen?

Mr. GRAHM. We'd stop hooking up customers, we'd stop maintaining the system. We would very rapidly have the liability problems. We would not have the fuel that is necessary to put into TMI-1. All of the things that an electric company must do just to keep its system giving service to its customers at a minimally adequate level.

Mr. KUHNS. Our ability to service the customers would be utterly destroyed.

Senator HEINZ. Now some people say there should be far more than $245 million passed on to the ratepayers. What in your view would be the consequences of that?

Mr. KUHNS. Passing more than the $245 million on to the customers? I think it's hard to say, Senator. As Chairman Palladino reminded us, it depends. It depends upon how much more than $245 million you're talking, and the other demands on the customer to have his rates increased to better serve him. And it's hard to isolate just one item in this total spectrum of ratemaking and deal with it. I can't tell you that $250 million would be the breaking point, or $260 million. I don't know. Most people have addressed it today, these numbers that we are talking about are not frozen. They are in ball park arenas and they appear as reasonable. The test of that will be to the extent that we can develop a consensus and finally close in and lock in commitments sufficient to produce the desired results.

Senator HEINZ. One other thing that people have said in the course of the day is the issue of the ultimate responsibility for the success or failure of the utility, ultimately being the responsibility not of the shareholder but of the ratepayer. Someone said, I forget exactly who, that there is a concept of risk here. There is a concept of the ratepayers, the consumers ultimately having to pay the cost of mistakes of the management or of suppliers or whoever makes the mistake.

Do you believe that the cost of mistakes should be borne basically by the ratepayers?

Mr. KUHNS. Not in any total sense, no. Certainly that wouldn't be the case here. We are not conceding the stakes. I think in the sense that you are making the point, I think the analysis of the actions demonstrate that any mistakes that were made, and there were mistakes made in terms of training operators and regulating the technology and developing the instrumentation. The whole spectrum of nuclear power involving all aspects of it failed.

The action has revealed those deficiencies. It was not the case of four men in the control room that didn't know what they were doing and therefore they should be shot at sunrise. The stockholder is certainly suffering. He will continue to suffer, so there is no escape here and no encouragement to management or stockholders or directors to retain management who aren't very careful and cautious in their management practice.

There are incentives that will continue to be good incentives for good management.

I can't sign up for the idea that well, whatever happens lay on the customer. I think it's true that in most cases no matter what efforts are taken and the more serious the problem, it ends up with the customers because you know, he is the only guy or gal available in the final result, and he either pays directly for increased costs or he pays later indirectly as a result of increased costs of capital of that, or depending upon the kinds of happenings that your question implies.

Senator HEINZ. Should in a sense the customer as you suggest, becomes a partial victim if management makes a mistake or if there is a set of decisions made by people beyond their control, how does one tell the ratepayer what justification do we have for telling the ratepayer that even if somebody, either management or the Nuclear Regulatory Commission or somebody like that makes a mistake, the buck stops with him? What protection does he have? Is that an adequate answer to him?

Mr. KUHNS. He can't be shielded completely.

Senator HEINZ. Suppose he says I can't be shielded completely, I ought to have more of a voice in the decisions that the utilities make. What is your answer?

Mr. KUHNS. We would support that fully and we would try and continue to try to involve regulation and the customer into the making in terms of where you build the next powerplant and what its size ought to be. There should be more of this indeed. Once the decisions are made and they are implemented, it cannot be a one-way street and that tends to be the attitude, certainly not you, I don't mean to imply that in any sense, but regulation does not reward utility stockholders today at a level that supports the provision of the stockholders of all risks that result in investments that are made. It just doesn't work that way. A return of 13 or 15 percent on equity does not support the imposition of unlimited open-ended risks. When one recognizes for instance on nuclear power, when these plants run well as they do, the benefits, of course, go directly to the customer. When they don't run some have a tendency to say well we didn't cause it not to run. It broke down. It's not our fault. But the stockholder has to pay for that. You just can't run it that way and attract the kind of capital that all utilities need to serve the customer.

Senator HEINZ. Mr. Kuhns, I'm going to have to temporarily recess the hearings. We have a vote on. We're down to the last few minutes.

Senator Simpson sent a message he was on his way over here and he will be momentarily. Until he arrives I'm going to recess the hearings, and he will I am certain keep them going.

[Whereupon, a brief recess was taken.]

Senator SIMPSON [presiding]. I do have some questions. The General Accounting Office has provided us with estimates of the rate increases for the GPU service area that would fully cover the cost of the cleanup. And based upon your past experience with Pennsylvania and the New Jersey ratesetting agency, how realistic is it to expect that such rate increases will be adopted in your mind and is there any way the GPU companies can pay the cost of cleanup without this rate relief?

Mr. KUHNS. To answer the second question first, there is no way we can without rate relief to support it.

Whether or not our perception of, well, our perception of whether or not we can succeed in passing the full burden along to the customer, I think one has to look at that in relation to what has happened since the accident. If we got the increases we were requesting now in both jurisdictions, our rates would about have doubled since the accident for Met Ed and New Jersey Central.

When one looks at just the increment for cleanup it is true for Met Ed it would be 15 percent, and for Penn Light it would be 6 percent and Jersey Central would be 3½ percent. One can very quickly react to that and say, well heavens, that's not very much. Let's go, let's lay it on. But we have to put it in perspective of what else has happened, and what must happen in terms of returning us as a viable supplier of electricity to some level of financial integrity to what we had before the accident. And it is a burden that we will have to work out and make filings with the Commission and fight for to accomplish that.

Senator SIMPSON. If there is not an expeditious resolution to the financing problem in a very short time, it will simply impede your ability to clean up the TMI site or control radioactive releases or exposure to the site. What is your present schedule for carrying out decontamination if the financial obstacles are resolved? What would be the impact of that schedule if we have a failure to resolve the financial problem?

Mr. KUHNS. At the end of this year we expect to have $90 million in insurance remaining out of the $300 million. We are involved right now in dealing with the containment water. That task should be completed by the middle of next year, middle of 1982. That task could be completed under, or within existing insurance framework remaining. If we do not have, we feel, of course, compelled to husband that $90 million very carefully until we have assurance that tests can be completed regarding the cleanup before we start them. We would have to simply shut down the cleanup at that island if it became clear that we did not have a predictable source of funds to pursue it. And we would work very hard to maintain the health and safety, babysitting the plant, if you will, which in and of itself costs $40 to $50 million a year, just to babysit that plant, accomplishing no real positive cleanup.

Mr. **Arnold**. I could perhaps clarify that. It might be $35 million if we were able to go to an absolutely only babysitting scope of activity. But if one is to maintain capability to proceed with the cleanup and be able to respond to the concerns that exist such as the many questions being asked at these hearings, it's necessary to maintain a staff there and maintain a capability that puts us in the range of $40 to $50 million, the minimum level of expenditures, to be in responsible position.

Senator **Simpson**. Your testimony notes that a significant research and development values could be derived in the cleanup process, and I think many testified the actual research and development sort of compels the Government into this role and to its participation and you have noted the value of the fuel and material examination alone might reduce otherwise the Federal nuclear research and development by some $300 million. And I'm wondering, what do you describe as those specific R. & D. programs and how you arrived at that $300 million figure.

Mr. **Cherry**. Senator, we are in the final stages of wrapping up a study on those research and development values and have some preliminary figures. The estimate that the testimony was based on some discussions that we had with representatives of the Nuclear Regulatory Commission and others, and the research and development values derived from the accident really fall into three categories. Those direct examination of materials that have undergone conditions that have not been previously experienced by the reactor systems. There is a functional research and development derived directly from the cleanup activities. And then there are the learnings that relate the operations of plants under accident conditions to some of the more detailed material evaluations.

The $300 million number basically flows from estimates of what comparable experiments and the loft facility might cost. Recognizing the information might be gained from the loft facilities, will not be as directly applicable to reactor operation as perhaps the Three Mile Island experience would be. And the estimates that we've seen is that that aspect alone of the learnings at Three Mile Island could be as much as $300 million over a period of 4 or 5 years.

Senator **Simpson**. I thank you very much.

I think that will conclude this panel, and we'll step very swiftly into the next one.

I believe you have been advised of the time limitations on your oral testimony and your written testimony, of course, will be put in the record. We'll proceed in the order as the panel is designated here on the agenda, with Mr. Schmalz.

STATEMENT OF RICHARD SCHMALZ, ESQ., GENERAL COUNSEL, THE HARTFORD INSURANCE GROUP, REPRESENTING AMERICAN NUCLEAR INSURERS, MUTUAL ATOMIC ENERGY REINSURANCE POOL, AMERICAN INSURANCE ASSOCIATION, AND ALLIANCE OF AMERICAN INSURERS, ACCOMPANIED BY RICHARD NEWCOMB, SENIOR VICE PRESIDENT OF ARKWRIGHT BOSTON INSURANCE CO., AND CHAIRMAN OF THE MUTUAL ATOMIC ENERGY REINSURANCE POOL; BURT PROOM, PRESIDENT OF AMERICAN NUCLEAR INSURERS; AND JOSEPH MARRONE, GENERAL COUNSEL OF AMERICAN NUCLEAR INSURERS

Mr. **SCHMALZ.** Thank you, Mr. Chairman.

With me today are Richard Newcomb, senior vice president of Arkwright Boston Insurance Co., and chairman of the Mutual Atomic Energy Reinsurance Pool; Burt Proom, president of American Nuclear Insurers and Joseph Marrone, general counsel of American Nuclear Insurers.

We are here today on behalf of the two nuclear insurance company pools and also on behalf of the American Insurance Association.

We have been asked to comment specifically on S. 1606 and to address the larger questions related to the governmental and private actions needed to assure the prompt and safe cleanup of the TMI site and any possible future accident situations.

We have attached a full written explanation of our views and our answers to some specific questions submitted to us by the committee staff and we ask that our supplemental written testimony be included in the record.

S. 1606 clearly puts the U.S. Government in the excess nuclear property insurance business as part and parcel of its objective to see to it that the TMI site is cleaned up expeditiously. While we do not have the wisdom of cleaning up promptly, there is no justification, in our view, for taking the extraordinary step of creating a Government insurance program and then applying it retroactively to a loss which has already happened. Surely there are ways to accomplish the cleanup of TMI without such drastic action.

As we have heard this morning, there are ways to accomplish cleanup of TMI without such drastic acts.

S. 1606 raises immediately the larger question of whether the problems related to completing the cleanup of TMI promptly are sufficiently like those which may arise in connection with possible future accidents to warrant an omnibus solution. We do not believe they are.

Before TMI and for a considerable period afterward we venture that not many people would have thought that the costs of cleanup would be anywhere near as high as they are turning out to be. The costs have also been considerably higher than one would expect simply because TMI was the first serious accident. And the cleanup has been delayed by the unwillingness of local regulatory authorities to allow the plant owners to recover the costs in their rates.

None of these circumstances will necessarily obtain in the future. The need for higher amounts of insurance is clearly recognized as is the need for speeding up regulatory approval of the cleanup process itself. Ultimately we believe local regulatory authorities will recognize that the costs of nuclear accidents are in major part at least, legitimate costs of nuclear power. The question will not be whether nuclear accidents are the responsibility of plant managers, owners, regulatory officials, local ratepayers, or the public. The question will be what are the best, most efficient ways of distributing the risk and providing for the payment of accident costs.

In a private enterprise society we normally allow private sources to work out the answer because, in general, the process does so without introducing the subsidies that, more often than not, get built into Government programs. S. 1606 does not necessarily provide the best answer to allocating the costs of nuclear accidents efficiently or equitably.

The case for S. 1606 would be stronger if there were a failure or inability of private sources to provide sufficient insurance coverage. No such failure or inability has been demonstrated. Several steps have already been taken which indicate that at least $1 billion of private insurance is within reach.

The second larger question that S. 1606 raises is what should be the role of the Government and the private sectors, not so much with respect to the cleanup of TMI, but in relation to providing——

Senator **Heinz** [presiding]. Excuse me. Just to clarify something in your statement, you say the case for S. 1606 would be stronger if there was a failure or inability of private sources to provide insurance coverage. And then you go on to say that hasn't been demonstrated. That is only prospective. That doesn't handle the problem that exists that we have been talking about today.

Mr. **Schmalz**. It doesn't handle the cleanup of TMI. This is the second phase of 1606 which deals with possible future, and this is largely what our testimony is about today.

S. 1606 gives the Secretary enormous power to shape the future development of private sources of property insurance for nuclear powerplants. He may use any criteria he chooses to determine the threshold amount of private insurance available and the rates for his excess insurance. His insurance program is not subject to any State or Federal taxes. Under these circumstances the amount of private insurance is not likely to increase much beyond the $350 million threshold expressly stated in the bill. Cost comparisons will inevitably be made. No private sources will be able to compete successfully against the insurance program established by S. 1606.

We do not believe that the Federal Government should place itself into direct competition with private sources of insurance capacity any more than we believe it should take over the production of electricity. The temptation to do so is no doubt greater because insurance does not require enormous capital outlays and the organization of complex power distribution systems. The principle, however, is exactly the same. We believe the more appropriate role for Government in both cases is to encourage and assist private sources to develop adequate supplies of electrical energy and the insurance needed to protect the public.

We believe that with a modest amount of such encouragement and assistance $1 billion of property insurance can be made available from private sources within a matter of months and that well over $1 billion can be expected in the near future. No new Government insurance fund or Government insurance corporation would be needed to accomplish these objectives.

We do not object to Government measures to assist in the cleanup of Three Mile Island or to share in the costs. Traditionally, the Federal Government has taken the lead in affording relief against unexpected financial hardship and possible physical harm to the public when a disaster has occurred. But we think that Government measures of this sort should be tailored to that objective and should not directly govern or shape future property insurance programs.

Our conclusions in this respect are in essential agreement with those reached by the Comptroller General in his report to the Congress of the United States made less than 2 months ago on August 26, 1981. In his report the Comptroller General stated:

> We believe that the private sector has the resources to provide adequate property insurance coverage without government intervention. There is some indication that the nuclear utility and insurance industries are voluntarily taking positive steps to markedly increase current coverage levels. We believe this is the preferable method and should be encouraged by Federal and State regulators * * *
>
> If mandatory coverage becomes necessary, we believe that it can be successfully managed by the private insurance and/or utility industry sectors. Therefore, the development of a quasi-governmental corporation as envisioned by H.R. 2512 and S. 1226 to provide the necessary supplemental coverage does not appear to be necessary at this time.

We might add, Mr. Chairman, that the bills referred to in the Comptroller General's report are similar to S. 1606 with respect to the larger general questions raised.

In our supplemental written testimony we address a third major question: What is the sensible balance between the amount of the funds that should be immediately available at the time of loss, either from guaranteed cost insurance, or accumulated reserves, and the funds that can be prudently left to recovery by past loss charges or assessments? The creation of enormous reserves in advance of loss is a highly capital intensive approach and consequently very costly. We believe a reasonable balance would be achieved by allocating from $500 to $750 million to each category of funds for a total of $1 billion to $1.5 billion. We do not mean to imply that the costs of cleanup could never exceed such amounts but that these amounts would be sufficient even in the most extreme tasks to get the process of decontamination underway promptly and well down the track. There would be ample time to work out the funding of any excess without the pressures that have occurred in connection with the Three Mile Island accident.

We also make recommendations for some specific steps which the Federal Government could take to encourage the rapid buildup of insurance capacity from private sources. These steps include adding to the provisions of the Price-Anderson Act dealing with financial protection, a requirement that licensees maintain property insurance at the maximum amounts available from qualified private sources as determined by the Nuclear Regulatory Commission. The NRC would also be authorized to encourage and approve reinsurance arrangements among such sources designed to make the maximum insurance capacity available to licensees at reasonable cost and in reasonable terms. These steps alone could raise the insurance from private sources to at least $800 million.

I might add the amendment to the Price-Anderson Act may not be necessary if the Nuclear Regulatory Commission on its own initiative adopts appropriate regulations.

Government authorization of the use of a credit rating plan similar to that applicable to nuclear energy liability insurance would also enhance the growth of property insurance capacity by allowing the accumulation of reasonable reserves without premature dilution by Federal income taxes. It would also reduce or eliminate the need to shift so much private source capacity to foreign based insurance operations.

While we are opposed to legislation which puts the Government in direct competition with private sources of property insurance, we believe the establishment of reserves in advance on a tax-free basis for possible nuclear losses, as contemplated by S. 1606, is sound. There is no reason, however, why this could not be left to private sources operating under similar tax treatment.

I'd like to thank the committee for the opportunity to state our views, and we will be glad to respond to questions.

[The prepared statement of Mr. Schmalz follows:]

STATEMENT OF
AMERICAN NUCLEAR INSURERS
MUTUAL ATOMIC ENERGY REINSURANCE POOL
AMERICAN INSURANCE ASSOCIATION

BEFORE

THE COMMITTEE ON ENERGY AND NATURAL RESOURCES

AND

THE SUBCOMMITTEE ON NUCLEAR REGULATION,

COMMITTEE ON THE ENVIRONMENT AND PUBLIC WORKS

OCTOBER 20, 1981

I am Richard Schmalz, General Counsel of the Hartford Insurance Group, a member of American Nuclear Insurers. With me are Richard Newcomb, Senior Vice President of Arkwright Boston Insurance Company, and Chairman of the Mutual Atomic Energy Reinsurance Pool; Burt Proom, President of American Nuclear Insurers and Joseph Marrone, general counsel of American Nuclear Insurers.

We are here today on behalf of the two nuclear insurance company pools and also on behalf of the American Insurance Association.

We have been asked to comment specifically on S.1606 and to address the larger questions related to the governmental and private actions needed to assure the prompt and safe cleanup of the TMI Site and any possible future accident situations.

We have also been asked to keep our oral testimony to 10 minutes. With that limitation in mind it seems best for us merely to touch upon the larger questions which occur to us and then to state our position with respect to S.1606. We have attached a fuller written explanation of our views and our answers to some specific questions submitted to us by the Committee staff. We ask that our supplemental written testimony be included in the record.

S.1606 would establish a insurance plan operated by the Secretary of Energy to pay for a substantial portion of the remaining cost of cleaning up the TMI site. In addition to applying retroactively to the Three Mile Island loss, the Secretary's insurance plan would apply prospectively to provide property insurance to the licensees of nuclear power plants in excess of the insurance available from private sources. There is a threshold of $350 million.

Participation in the Secretary's insurance program is compulsory. The amount of the coverage is $2 billion as a minimum, but it may be increased by the Secretary at will. The Secretary determines the appropriate rates and premium schedules, the amount of the reserve (at least $750 million) to be accumulated against future losses and the amount of any additional premium assessments to be paid by licensees if the reserve is not sufficient to pay losses. The liability of licensees for retrospective premiums is apparently unlimited.

S.1606 clearly puts the United States government directly in the excess nuclear property insurance business as part and parcel of its objective to see to it that the TMI site is cleaned up expeditiously. While we do not doubt the wisdom of completing the cleanup promptly, there is no justification, in our view, for taking the extraordinary step of creating a government insurance program and then applying it retroactively to a loss which has already happened. Surely there are ways to accomplish the clean up of TMI without such drastic action.

S.1606 then raises immediately the larger question whether the problems related to completing the cleanup of TMI promptly are sufficiently like those which may arise in connection with possible future accidents to warrant an omnibus solution. We do not believe they are.

Before TMI and for a considerable period afterward we venture that not many people would have thought that the costs of cleanup would be anywhere near as high as they are turning out to be. The costs have also been considerably higher than one would expect simply because TMI was the first serious accident. And the cleanup has been delayed by the unwillingness of local regulatory authorities to allow the plant owners to recover the costs in their rates.

None of these circumstances will necessarily obtain in the future. The need for higher amounts of insurance is clearly recognized as is the need for speeding up regulatory approval of the cleanup process itself. Ultimately, we believe, local regulatory authorities will recognize that the costs of nuclear accidents are in major part at least, legitimate costs of nuclear power. The question will not be whether nuclear accidents are the responsibility of plant managers, owners, regulatory officials, local rate payers or the public. The question will be what are the best, most efficient ways of distributing the risk and providing for the payment of accident costs.

In a private enterprise society we normally allow private sources to work out the answer because, in general, the process does so without introducing the subsidies that, more often than not, get built into government programs. S.1606 does not necessarily provide the best answer to allocating the costs of nuclear accidents efficiently or equitably.

The case for S.1606 would be stronger if there were a failure or inability of private sources to provide sufficient insurance coverage. No such failure or inability has been demonstrated. Several steps have already been taken which indicate that at least $1 billion of private insurance is within reach.

The second larger question that S.1606 raises is what should be the role of the government and the private sectors, not so much with respect to the clean up of TMI, but in relation to providing insurance against future accidents. S.1606 gives the Secretary enormous power to shape the future development of private sources of property insurance for nuclear power plants. He may use any criteria he chooses to determine the threshold amount of private insurance available and the rates for his excess insurance. His insurance program is not subject to any state or federal taxes. Under these circumstances the amount of private insurance is not likely to increase much beyond the $350 million threshold expressly stated in the bill. Cost comparisons will inevitably be made. No private sources will be able to compete successfully against the insurance program established by S.1606.

We do not believe that the Federal government should place itself into direct competition with private sources of insurance capacity any more than we believe it should take over the production of electricity. The temptation to do so is no doubt greater because insurance does not require enormous capital outlays and the organization of complex power distribution systems. The principle, however, is exactly the same. We believe the more appropriate role for government in both cases is to encourage and assist private sources to develop adequate supplies of electrical energy and the insurance needed to protect the public.

We believe that with a modest amount of such encouragement and assistance $1 billion of property insurance can be made available from private sources within a matter of months and that well over $1 billion can be expected in the near future. No new government insurance fund or government insurance corporation would be needed to accomplish these objectives.

We do not object to government measures to assist in the clean up of Three mile Island or to share in the costs. Traditionally, the Federal government has taken the lead in affording relief against unexpected financial hardship and possible physical harm to the public when a disaster has occurred. But we think that government measures of this sort should be tailored to that objective and should not directly govern or shape future property insurance programs.

Our conclusions in this respect are in essential agreement with those reached by the Comptroller General in his Report to the Congress of the United States made less than two months ago on August 26, 1981. In his report the Comptroller General stated:

> "We believe that the private sector has the resources to provide adequate property insurance coverage without government intervention. There is some indication that the nuclear utility and insurance industries are voluntarily taking positive steps to markedly increase current coverage levels. We believe this is the preferable method and should be encouraged by Federal and State regulators.

.....

> "If mandatory coverage becomes necessary, we believe that it can be successfully managed by the private insurance and/or utility industry sectors. Therefore, the development of a quasi-governmental corporation as envisioned by H.R. 2512 and S.1226 to provide the necessary supplemental coverage does not appear to be necessary at this time."

We might add, Mr. Chairman, that the Bills referred to in the Comptroller General's Report are similar to S.1606 with respect to the larger general questions raised.

In our supplemental written testimony we address a third major question: What is the sensible balance between the amount of the funds that should be immediately available at the time of loss, either from guaranteed cost insurance, or accumulated reserves, and the funds that can be prudently left to recovery by post loss charges or assessments. The creation of enormous reserves in advance of loss is a highly capital intensive approach and consequently very costly. We believe a reasonable balance would be achieved by allocating from $500 to $750 million to each category of funds for a total of $1 billion to $1.5 billion. We do not mean to imply that the costs of cleanup could never exceed such amounts but that these amounts would be sufficient even in the most extreme cases to get the process of decontamination under way promptly and well down the track. There would be ample time to work out the funding of any excess without the pressures that have occurred in connection with the Three Mile Island accident.

We also make recommendations for some specific steps which the Federal government could take to encourage the rapid build-up of insurance capacity from private sources. These steps include adding to the provisions of the Price-Anderson Act dealing with financial protection a requirement that licensees maintain property insurance at the maximum amounts available from qualified private sources as determined by the Nuclear Regulatory Commission. The NRC would also be authorized to encourage and approve reinsurance arrangements among such sources designed to make the maximum insurance capacity available to licensees at reasonable cost and in reasonable terms. These steps alone could raise the insurance from private sources to at least $800 Million.

Government authorization of the use of a Credit Rating Plan similar to that applicable to nuclear energy liability insurance would also enhance the growth of property insurance capacity by allowing the accumulation of reasonable reserves without premature dilution by Federal income taxes. It would also reduce or eliminate the need to shift so much private source capacity to foreign based insurance operations.

While we are opposed to legislation which puts the government in direct competition with private sources of property insurance, we believe the establishment of reserves in advance on a tax free basis, for possible nuclear losses, as contemplated by S.1606, is sound. There is no reason, however, why this could not be left to private sources operating under similar tax treatment.

We thank the Committee for the opportunity to state our views, and will be glad to respond to questions.

APPENDIX A

LARGER QUESTIONS RAISED BY S.1606

I

Is the Present Situation (the Prompt and Safe Cleanup of TMI) Sufficiently Like Possible Future Accident Situations to Warrant Treating Them in the Same Manner?

In our judgment, the answer to this first question is "No". We agree that the expeditious cleanup of the Three Mile Island site is in everyone's best interest. We believe that the present situation is to a large extent unique and that possible future accident situations should be treated separately, with different techniques.

The TMI cleanup problem exists today because of three factors:

1) Before the Three Mile Island accident there was a general consensus that existing levels of property insurance were reasonably adequate. And, even in retrospect, this appears to have been a correct judgment as far as physical damage to the property at the site is concerned. The costs of cleanup, however, have turned out to be much higher than anticipated. The judgment that insurance capacity was reasonably adequate led to a lower demand for high limits than the Three Mile Island accident has shown to be appropriate, resulting, in a less than adequate supply.

2) The costs of cleanup have also undoubtably grown more than one would normally expect, because of regulatory delay in approving decontamination procedures. The delay has been due largely to the fact that the TMI accident was the first serious accident in the history of private nuclear power in the United States.

3) The cleanup itself is currently being delayed because local rate regulatory authorities have not been willing to recognize that nuclear accident costs are a part of the price of electricity generated by nuclear power plants.

None of these factors will necessarily apply to future accidents. The need for more property insurance has been clearly recognized by all interested parties, including the nuclear power plant operators. There is now a consensus that at least $1 billion of insurance should be made available as soon as possible. This demand is leading to new, radically different initiatives, which promise substantial increases in the amount of private insurance available. $1 billion is readily in sight. The need for regulatory speed-up has also been clearly demonstrated and, we believe, generally accepted.

The unwillingness of local regulatory authorities to allow any significant recovery of the balance of the cleanup costs at Three Mile Island may be understandable as an effort to shift them to parties other than the consumers of electric power in this jurisdition. It is, however, as noted in the General Accounting Office Report, a rather risky and potentially expensive policy. Nor does such a policy seem to correspond with economic reality in the long run. In the financial equation which determines the ultimate cost per kilowatt hour of electrical energy, the cost for nuclear accidents is as legitimate as the cost of the nuclear power plant in the first place or the premiums for insurance. Insurers have long recognized that while better management, better design, better quality control, better training, can all reduce the potential for accidents, serious accidents cannot be eliminated entirely.

We believe, accordingly, that as our dependence on nuclear power grows, state regulatory authorities will recognize that accident costs are a part of the rate structure. The questions will be not whether such costs are legitimate, but to what extent should the risk of incurring such costs be distributed by insurance mechanisms and to what extent should they be paid for in advance of a possible loss or after the loss has actually happened.

II

What Is the Sensible Balance Between Accumulating Capital Reserves Before a Possible Future Accident and Levying Past Loss Charges?

There is no easy answer to this question. It is a matter of judgment and emphasis. The answer is all the more difficult because the probability of a large nuclear accident is so very low while the potential for loss is so great.

To illustrate the difficulty, we will draw an analogy to automobile insurance, which is a more familiar kind of insurance to all of us. There are hundreds of thousands of automobile accidents every year in the United States. Nevertheless, it has been determined that if one were to observe the accident frequency of any individual driver for 50 years, one would have only a 70% chance of determining, within a range of 30%, the driver's true loss potential. Insurers can estimate accurately the accident frequency of individual automobile drivers only by taking an average of the accident experience of thousands of drivers. Contrast this with the fact that there has been only one serious nuclear accident in the twenty-five year history of commercial nuclear power plant operations.

Since it is not possible to predict either the timing or severity of nuclear accidents, maximum assurance that adequate funds will be available to cleanup any site that might suffer damage would demand a "flat out" accumulation of reserves to an extremely high amount. This would be a highly capital intensive approach, with correspondingly high costs.

One would question the wisdom of such an extreme approach, not only for its potentially high cost, but because the costs of cleanup will undoubtably be spread over a reasonably long period of time. A more moderate course would be to accumulate some reserves in advance and to recover the balance of the cleanup costs, if any, after the accident actually happens. This is a common insurance technique which is potentially less capital intensive and less expensive. It is also more equitable because it is designed to spread the cost of loss on those who use electric power before and after loss.

A third technique would be to wait until the loss occurs and then pay for it. This requires no capital in advance. It is riskier than either of the other two approaches because it may not accumulate funds fast enough to meet the ideal cleanup schedule. It may be less equitable than the moderate approach because the loss falls entirely on those who use electric power after the loss. It may disrupt financial markets because the impact will be felt simultaneously with other severe economic burdens, such as the cost of replacement power.

We believe that the middle ground strikes a more sensible balance than either of the extremes. The amount of the funds to be established as immediately available at the time of loss should probably be in the range of $500 to $750 million. The balance of the funds to be accumulated after loss should probably be within a similar range. This would provide a total of $1 billion to $1.5 billion recovery from a formal insurance plan.

We think that decontamination expenses will not necessarily increase in direct proportion to property values, but they are likely to rise in relation to the rate of inflation. The $1 billion to $1.5 billion should not be regarded as static. Periodic raises in the recovery limit from a formal insurance program can be achieved by increases in the number of power plants insured and the growth of private insurance capacity.

This does not imply an assumption on our part that the total limits of cleaning up a nuclear site will never exceed $1 billion to 1.5 billion. It suggests that, in the light of the Three Mile Island experience, such an amount will be adequate to get decontamination procedures underway and well down the track, allowing ample time to arrange for any supplemental funding that may be necessary in a cost effective manner.

III

What is the Proper Role and Responsibility of the Government and Private Sectors in the Present and the Possible Future Accident Situations?

With respect to the cleanup of the TMI Site, we believe that the Federal government and the State governments directly involved should take the lead in marshalling the necessary funds in excess of the private insurance limits available for clean up. These limits are $300 Million and will be exhausted in the not too distant future.

We understand that presently efforts are being made, particularly by Governor Thornburgh, the Federal government and the electric utilities to work out a plan to fund the balance of the cleanup costs. There appears to be a reasonable chance that these efforts or similar efforts will succeed. And as we have indicated, we believe that the cleanup of the TMI site should be treated separately from the general solution of providing insurance for possible future accidents.

With respect to the cleanup of possible future accident sites, we believe that the private sector should bear the primary responsibility for putting in place a flexible insurance mechanism based on the middle ground approach we discussed earlier. We do not believe that a government organized or funded insurance company is either necessary or appropriate.

There is no evidence to suggest that private sources will be unable to provide at least $1 billion of property insurance in the near future, especially if existing sources of capacity can be meshed effectively. The Nuclear Pools and Nuclear Mutual Limited have separate capacities which aggregate nearly $825 million. These capacities are not being used efficiently today because they are not being combined. If these capacities were combined it would be a short step to $1 billion and but a step or two more to the $1.5 billion level.

It is in this area that the Federal government could play an important role in encouraging the growth of the maximum amount of private insurance capacity.

IV

What Specific Steps Could the Federal Government Take to Enhance the Amount of Property Insurance Coverage Available for Clean Up Costs Arising out of Possible Future Accidents?

There are perhaps three basic causes which have inhibited the growth of nuclear property insurance capacity to the extremely high levels which are now recognized as appropriate.

First, there has been for several years doubt about the viability of nuclear power plants as a continuing source of energy. Everything about nuclear power has become enormously more expensive than it would otherwise be simply because of this doubt. Our licensing process has stretched to from 10 to 14 years. Even when there has been a serious accident, and it is in everyone's interest to clean up the damage as expeditiously as possible, significant costs are being incurred merely to maintain the status quo while waiting for regulatory approval to proceed.

The President's recent statement of October 8, 1981 recognized a number of government deficiencies and announced a series of policy changes to correct them. The President's statement indicates the Administration's conviction that nuclear power is one of the best potential sources of new electrical energy supplies in the coming decades. If the President's views are generally shared and endorsed by the Congress, doubts about the future of nuclear power will be substantially overcome.

Second, the purchase of property insurance for nuclear power plants has been voluntary. No guidelines have been set for the appropriate levels to be maintained. None have been necessary in the past, but TMI has established that cleanup costs can exceed plant values and raise safety issues that are of concern to the general public. To encourage the development of maximum insurance capacity from private sources the Nuclear Regulatory Commission could require either certain specific levels of property insurance or the maximum which is available in the aggregate by combining all qualified private sources. Qualified private sources would include established domestic stock and mutual insurance companies and foreign based insurance plans that provide substantial amounts of dependable capacity at reasonable fixed costs or under reasonable post loss assessment plans.

Finally, there are two serious potential road blocks to maximizing insurance capacity: The United States tax laws and the United States Anti Trust Laws. These laws are somewhat ambiguous as they apply to the matter at hand.

There are many who believe that the federal income tax laws can be interpreted, and are likely to be interpreted under current Internal Revenue Service Regulations, as imposing a tax on insurance companies doing business in the United States on the difference between the premiums earned during any annual period and the losses incurred during the same period. As we noted earlier, Nuclear accidents are so rare that virtually all premium net of administrative expense earned over the years before an accident happens constitutes a technical "underwriting profit" each year which is subject to tax at the full federal income tax rates.

Such a tax effectively bars the accumulation of the substantial reserves in advance of loss which we have recommended as reasonable (that is, $500-750 million). This is why Nuclear Mutual Limited and Nuclear Electric Insurance Limited have an enormous advantage over the United States Nuclear Pools, ANI and MAERP. This is also one of the reasons why the Hartford and number of other members of American Nuclear Insurers plan to form a Bermuda insurer that will be able to compete with NML and NEIL on equal terms. The other reason is that strictly on the merits of the case, the idea of accumulating reserves against a future possible TMI, without dilution along the way by current income taxes, makes sense from the point of view of the consumers of electric power and the public generally. We have indeed recommended this approach as the most reasonable method of dealing with the cleanup costs of possible future nuclear power plant accidents.

Of course the companies do not expect to avoid taxes on their underwriting profits. But a true underwriting profit cannot be determined on an annual basis. A much longer period, perhaps 10 years is needed. ANI and MAERP have a long standing ruling from the IRS for a special Industry Credit Rating Plan which operates on a 10 year basis. This rule applies only to nuclear energy liability insurance.

There has been a feeling in the past that such a ruling would not be extended to property insurance because the catastrophe potential appeared to be so remote. Three Mile Island, however, has shown that such a ruling is necessary.

The Nuclear Pools plan to discuss the feasability of a similar tax treatment for nuclear property insurance with the Department of Energy and the Internal Revenue Service. If such a tax treatment can be achieved, it would strongly enhance the ability of the American Nuclear Pools to increase their capacity at reasonable cost to nuclear plant operators and in turn their rate payers.

Finally, there are some who believe that the United States Anti Trust Laws might limit the meshing of capacity by a number of competing sources even in the interest of making greater amounts of protection available to nuclear plant owners and their rate payers at lower costs. We do not subscribe to that view, but as long as doubt remains, the exchange of reinsurance among the present and future sources of nuclear property capacity will be inhibited.

We believe that this issue could be put to rest by relatively minor amendments to the Price Anderson Act, authorizing the Nuclear Regulatory Commission to establish property insurance protection requirements and to authorize the exchange of reinsurance among the qualified sources of such insurance in the interest of providing the maximum total amount of capacity to nuclear power plant operators at reasonable cost and terms. These amendments should also remove any doubt that the costs of such insurance, including retrospective premium charges, are to be included in determining the rates for electricity.

APPENDIX B

ANSWERS TO THE COMMITTEES' QUESTIONS

1. It would appear that the expeditious cleanup of the Three Mile Island site is in everyone's best interest. Do you believe that a prompt resolution of the financial uncertainties regarding the TMI cleanup is an essential first step in solving the cleanup problem? Please explain.

We agree that the expeditious cleanup of the Three Mile Island Site is in everyone's best interest. Prompt resolution of the financial uncertainties regarding the TMI cleanup would certainly be a helpful step in speeding up the cleanup. It does not follow, however, that the resolution of the TMI uncertainties is an essential first step in solving cleanup problems that may arise from future accidents.

As brought out in our statement, we believe that the clean up of TMI is a separate issue which lends itself to a different treatment from that applicable to future accidents.

2. What is your view of the Federal, State, and ratepayer role and responsibility in the cleanup?

We believe that the Federal government and the State governments directly involved should take a leadership role and responsibility in the cleanup of the TMI site. It appears that there may be some risk of physical harm to the public as well as adverse financial consequences. It seems apparent that General Public Utilities Corporation will be unable to complete the task without financial assistance.

Governments, particularly the Federal government, have traditionally assumed a role in making financial and other assistance available in the event of disasters. The Federal government also largely controls the cleanup process, and to some extent its costs, through its regulatory process. The State governments control the revenue available to GPU through their control over its rates. Rate payers should bear a part of the cleanup costs since the cost of nuclear accidents is, from an economic standpoint, a legitimate expense of producing electricity from nuclear power plants.

3. Given the experience of the TMI accident, what is an appropriate level of property insurance coverage?

We believe an appropriate level of property insurance for the near future would range from $1 Billion to $1.5 Billion. This is not necessarily a static figure. Our Statement contains a fuller discussion of what is a reasonable amount of property insurance and the factors bearing on a sensible balance between accumulating reserves in advance of loss and levying post loss charges or assessments.

4. What actions have been taken, or should be taken, to ensure that the appropriate level of property insurance protection is available in the event of a future accident?

Several actions have been taken to ensure that $1 Billion will soon be available. First the Nuclear Pools have raised their primary capacity to $375 Million and expect to increase it to $450 Million by January 1, 1982.

Second, Nuclear Mutual Limited, a Bermuda captive owned by certain utilities, has increased its primary capacity to $450 Million.

Third, Nuclear Electric Insurers Limited, a Bermuda captive owned by certain utilities, is soliciting participation in an Excess Program based in part on annual advance premiums and in part on retrospective premiums. The target limit is $500 Million. The actual limit is unknown, depending on the number of participants and the availability of outside reinsurance.

Fourth, The Nuclear Pools are soliciting participation in an Excess Program based almost entirely on retrospective premiums. The Target Limit is $300 Million, with the actual limit unknown, depending on the number of participants. In addition, the Pools are seeking an additional $200 million of third layer excess coverage.

Fifth, an independent stock insurer is being formed in Bermuda to offer an Excess Program similar to that of the Nuclear Pools, but with advance premiums and retrospective premium arrangements similar to NEIL's. The Target Limit is $300 Million. Again, the actual limit is unknown depending on the number of participants.

The Nuclear Pools and the independent stock insurer will exchange reinsurance which will have the effect of combining their capacity. The Nuclear Pools have offered to exchange reinsurance with both NML and NEIL. This would have the effect of combining these capacities. To date, these offers have not been accepted.

While there is some overlapping among these sources, a very active market is developing. We believe, despite the complexity of these private initiatives,that this is healthy. It offers utility owners great flexibility in placing and tailoring their insurance requirements. This serves to increase full participation in voluntary private insurance programs by the utilities.

There are a number of steps which could be taken by the Federal Governement to ensure that $1 Billion of property insurance is promptly available and that this amount will increase as time goes by. These steps are discussed in our statement. They include the establishment of property insurance protection requirements under the Price-Anderson Act along the lines required for nuclear energy liability insurance, the authorization and approval of the exchange of reinsurance among the various private sources so as to maximize spread of risk and total capacity and approval of a Credit Rating Plan similar to that applicable to nuclear energy liability insurance. The latter plan allows a build up of reserves over a 10 year period without dilution by Federal income taxes.

5. Summarize your group (agency) involvement in the TMI-2 cleanup.

The Nuclear Pools insured the TMI site for property damage arising out of the March 29,1979 accident. The policy limit is $300 Million. Since the accident approximately $230 million has been paid. Periodic payments will continue to be the made as cleanup costs are incurred until the limit of liability is exhausted.

The total payments for the TMI accident are expected to exceed the available funds to pay losses received by the Pools since they began insuring nuclear power plants in 1957. These losses will be paid out of the Member Companies' general surpluses.

Senator HEINZ. Thank you very much. I'm sorry I missed the first part of your statement.

Let me ask Mr. Gillham and Mr. Kron who I understand have a statement.

Mr. GILLHAM. Mr. Kron and I have prepared joint testimony which we would like to have entered into the record.

Senator HEINZ. Without objection.

Mr. GILLHAM. Mr. Kron will now summarize our testimony.

STATEMENT OF PHILIP C. KRON, VICE PRESIDENT, CITIBANK, N.A., NEW YORK, N.Y.; ACCOMPANIED BY ROBERT GILLHAM, VICE PRESIDENT, UTILITIES CHEMICAL BANK, NEW YORK, N.Y.

Mr. KRON. My name is Philip Kron and I am vice president of Citibank in New York. And I might incidentally add for the record while Senator Bradley may be the only Senator that is paying for the accident through its rates, I may be the only witness today that is paying for the accident through my rates as a Jersey Central ratepayer.

My colleague is Robert Gillham, who is vice president of Chemical Bank, also of New York.

Our 2 banks are agents for 45 banks who are parties to revolving credit agreement dated as of June 15, 1979. Each provides a revolving credit facility to the General Public Utilities Corp., and its three operating subsidiaries, which are the owner of the Three Mile Island nuclear station.

A group of banks was formed after the accident in order to provide working capital and a financial bridge to a more permanent solution to the cleanup costs and the other financial ramifications of the accident.

The details of the credit agreement are set forth in our written testimony. The largest amount outstanding is $287 million in August 1980, and the current amount outstanding is $85 million.

As is evident, as the financial condition of the company is worsened, we have sought to limit our exposure and we now believe that we have sufficient collateral to avoid any economic loss in the event of a bankruptcy.

Our perspective, therefore, now before these committees is not that of creditors looking for bailout, rather we are coming to express our deep concern about potential impact of the GPU bankruptcy on continued access for the capital markets by electric utility industries as a whole. We hope we will not see a bankruptcy at GPU. There has never been a bankruptcy of an electric utility in modern times, and perhaps for that reason GPU's bankruptcy has generally been unthinkable.

Without substantial rate relief and a definitive solution the cleanup funding in early 1982, GPU is not likely to have the resources to meet it's $85 million in refunding obligations in early 1983. Therefore, time is running short. As the report of the Nuclear Regulatory Commission staff and the Comptroller General make clear, a GPU bankruptcy would have profound consequences on the credit markets. The utility industry has historically assumed one-third of the capital available to private nonfinancial businesses. It has done so because it offered the investors stable, relatively assured profitability, with little risk of loss.

Obviously this environment which has enabled the utilities to raise vast amounts of capital at relatively low cost over the years would no longer exist in the aftermath of a GPU bankruptcy. As we view the situation, it breaks down into the specific problem of cleaning up after the accident and restoring GPU with financial help, and the general industry of inadequate property insurance coverage of nuclear plant across the Nation.

Up until Governor Thornburgh's proposal for a shared approach to clean up Three Mile Island, we were not optimistic about getting cleanup behind us. Each party seemed to be saying the cleanup was someone else's responsibility.

Now, however, we are gratified with the initial responses to the Governors proposal by the Edision Electric Institute, and more recently by the administration. We believe that the total figure contemplated by the Governor's proposal is in the ball park and that the distribution is equitable.

Our enthusiasm for Governor Thorngurgh's proposal is, however, tempered by our concern about whether firm funding commitments as opposed to mere expressions of support could be lined up early enough in 1982 to prevent a major financial problem in 1983. Equally vital to the success of Governor Thornburgh's program is the restart-up of unit 1 in 1982.

We are less impressed, however, with progress toward solving the general industry insurance problem. The EEI has testified it's working to increase coverage to $1 billion and that would certainly be welcome. We seriously question, however, whether $1 billion is enough. The combined cost of the plant and cleanup at Three Mile Island has demonstrated it could be much in excess of that figure.

Several nuclear sites now under construction are likely to cost over $3 billion apiece. We perceive two key difficulties with the insurance question. First, there is a relatively small base; that is, the number of nuclear plants from which to collect premiums.

Second, there is the nature of catastrophe, an event which by definition is highly unlikely to occur, but when it does the financial consequences could be enormous. It is difficult if not impossible to rate such risks. What seems to be needed, therefore, is an umbrella effect of coverage I'm aware the private sector has the capacity reasonably to provide. The umbrella would make payments after a catastrophic accident and internalize the cost by collecting premiums retroactively from all property insurance premium payers. We have reluctantly come to the conclusion that the Federal Government is the only appropriate instrumentality to effect this arrangement.

What we are really saying by this is that we are suggesting a Federal umbrella which supplements and does not compete with private insurance coverage.

S. 1606 does address the problem of under insurance and provides a funding mechanism. However, we believe that a much less elaborate framework could be, all that seems required is standby authority in a Federal agency such as the Nuclear Regulatory Commission or the Department of Energy to pay property damage claims resulting from an accident and exceeding the reasonably available amount of private coverage. Funds could be acquired by the agency borrowed from the Treasury and repaid with interest for the receipts of licensee fees which the agency would be authorized to impose.

There is no need for any separate fund, premium determinations, or collections of reserves as contemplated by S. 1606. The Federal Government would do nothing until after an accident should occur and private coverage had been exhausted. Hopefully, a pair of conditions that would never occur.

We appreciate the opportunity to present our views to the committees and are prepared to answer any questions the members may have.

[The prepared statement of Mr. Kron and Mr. Gillham follows:]

TESTIMONY OF
PHILIP C. KRON, VICE PRESIDENT, CITIBANK
AND
ROBERT GILLHAM, VICE PRESIDENT, CHEMICAL BANK
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
AND THE
SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U. S. SENATE
October 20, 1981

My name is Philip Kron and I am a Vice President at Citibank in New York. My colleague is Robert Gillham who is a Vice President at Chemical Bank, also in New York. Our two banks are the agents for forty-five banks who are parties to a Revolving Credit agreement ("RCA") dated as of June 5, 1979, which provides a revolving credit facility to the General Public Utilities Corporation ("GPU") and its three operating subsidiaries which are the owners of the Three Mile Island nuclear station.

Shortly after the accident at Unit 2 at Three Mile Island in March 1979, it became clear that substantial bank credit for GPU would be necessary to provide working capital and a financial bridge to a more permanent solution to the cleanup costs and other financial ramifications of the accident. Accordingly, under our leadership. the forty-five banks agreed to substitute a formal, $412 million revolving credit arrangement for the then existing $225 million bank lines of credit which were inadequate, both structurally and in amount, to meet GPU's financial needs. Significantly, a large number of the forty-five banks did not have loans outstanding to GPU at the time of the accident.

Generally speaking, the RCA makes bank credit available to GPU in the following way. Two operating subsidiaries of GPU, Pennsylvania Electric and Jersey Central, which each own 25% of the Three Mile Island station, may borrow up to $116 million and $123 million, respectively, and GPU itself may borrow up to $75 million. GPU's third operating subsidiary, Metropolitan Edison ("Met Ed") which owns 50% of the station was originally entitled to borrow up to $125 million, but, as the financial condition of Met Ed worsened last year, this amount was changed to lower of $105 million or the amount of certain liquid assets of Met Ed as specially defined.

Aggregate borrowing by the GPU group could not exceed $292 million without the consent of banks holding 85% of the total commitment. The largest amount outstanding has been $287 million in August, 1980, and the current amount outstanding is $85 million. The credit "revolves" in the sense that funds may be borrowed, repaid and borrowed again subject to the conditions of the Agreement. Since November 1979, our bank group has been the only outside source of funds to GPU.

Our deepening concerns with the financial health of GPU have resulted from a number of difficulties that have developed since our original concept of a "financial bridge."

- First, we had initially expected Unit 1 to have been restarted in early 1980.
- Second, we had anticipated more timely and realistic rate increases and a more realistic

approach to the longer term problems of cleanup and restoration of Unit 2 from the state utility commissions than has been the case, especially in Pennsylvania.

- Finally, the cost estimates of cleanup and restoration have greatly exceeded the original estimates.

As a result, we now view GPU's financial condition with very serious concern.

Last month, the bank group, in considering a renewal of the credit, concluded that prudence at this point in time dictates minimizing our risk . The credit agreement has been extended to December 31, 1982, at the reduced amount of $200 million with only $150 million being available without a vote of the banks. The credit agreement was originally structured with one eye on the unthinkable, namely bankruptcy, and we have continued to manage it with that concern in mind. The recent extension provides for an orderly reduction in our exposure so that we enter the period of maximum risk, namely the $85 million in bond refundings during the first quarter of 1983, adequately protected by our collateral.

Our perspective, therefore, on the questions now before the Committees is not that of creditors looking for a bailout. Rather, we are coming to express our deep concern about the potential impact of a GPU bankruptcy on continued access to the capital markets by the electric utility industry as a whole.

The electric utility industry is one of the most significant factors in the capital markets year after year. Some statistics put the situation into perspective. It is estimated that capital expenditures of $155 billion will be made by the industry in the 1981-85 period and $365 billion for the 1981-1990 period. In each instance it is projected that 60%, or $95 billion and $220 billion respectively, will have to be raised externally. Another estimate is that the $220 billion to be raised over the next ten years, $66 billion will have to common equity compared to the $31 billion in common equity raised over the past ten years. What this means is that the electric utility industry will have to continue to attract a large proportion of all capital raised by private nonfinancial businesses.

In the past, the utility industry has historically consumed approximately one-third of the capital available to private non-financial businesses. It has done so because it offered the investor stable, relatively assured profitability with little risk of loss. As a result, the hundreds of thousands of utility investors across the Nation, many of whom have relatively modest holdings, have traditionally been "risk averse" -- that is, willing to assume very little in the way of perceived risk. But, in today's regulatory climate, combined with the significant nuclear property under insurance, these investors might well reconsider the investment decisions they have made in the past. Should that happen, the vast amounts of capital that the utility industry has historically required may become very difficult to obtain in the future. It is in this sense that, as one knowledgeable onlooker observed, nuclear utilities and, indeed, other electric utilities as well, are being held hostage to Three Mile Island.

As we view the situation, it breaks down into the specific problem of cleaning up after the accident and restoring GPU to financial health and a general industry problem of inadequate property insurance coverage for nuclear plants across the Nation.

Up until Governor Thornburgh's proposal for a shared approach to cleanup at Three Mile Island, we were certainly not optimistic about getting cleanup behind us. Each party seemed to be saying that the cleanup was someone else's responsibility. Now, however, we are gratified with the initial responses to the Governor's proposal by the Edison Electric Institute and more recently by the Administration. We believe that the total figure contemplated by the Governor's proposal is in the ballpark and that the distribution is equitable. Our enthusiasm for Governor Thornburgh's proposal is, however, tempered by our concern about whether firm funding commitments, as opposed to mere expressions of support, can be lined up early enough in 1982 to prevent a major financial problem in 1983. And, equally vital to the success of Governor Thornburgh's program, is the restart of Unit 1 in early 1982.

Prompt action by all participants is imperative. Even though we see the spring of 1983 as the latest available date for resolution of the problem, many favorable actions must be taken far in advance of that date. For example, the Pennsylvania Public Utilities Commission is presently considering GPU's rate proposals and must make decisions in early 1982. The Commission is not likely to be favorably disposed to do its part unless others such as the industry and the federal government are perceived to be doing theirs.

We are less impressed with progress toward solving the general industry under insurance problem. The EEI has testified that it is working to increase coverage to $1 billion and that would certainly be welcome. We seriously question, however, whether $1 billion is enough. The combined cost of plants and cleanup, as Three Mile Island has demonstrated, could be much in excess of that figure. Several nuclear units now under construction are likely to cost over $3 billion apiece.

We perceive two key difficulties with the insurance question. First, there is a relatively small base -- that is, the number of nuclear plants -- from which to collect premiums. Second, there is the nature of catastrophe -- an event which, by definition, is highly unlikely to occur, but when it does, the financial consequences can be enormous. It is difficult, if not impossible, actuarially to rate such risks.

Because of these problems, it may be that the private sector will not adequately meet the need.

What may be required, therefore, is an umbrella of excess coverage over what the private sector has the capacity reasonably to provide. The umbrella would make payments after a catastrophic incident and internalize the cost by collecting premiums, retroactively, from all property insurance premium payers. We have reluctantly come to the conclusion that the Federal government is the only appropriate instrumentality to effect this arrangement.

S. 1606 does address the problem of under insurance and provides a funding mechanism. We believe that a much less elaborate framework could also meet the need. All that seems required is standby authority in a federal agency such as the Nuclear Regulatory Commission or the Department of Energy to pay property damage claims resulting from an accident and exceeding the reasonably available amount of private coverage. Funds could be acquired by an agency borrowing from Treasury and repaid, with interest, from the receipts of licensee fees which the agency would be authorized to impose. There is no need of any separate fund, premium determinations or collections of reserves as contemplated by S. 1606. The federal governent would do nothing until after an accident had occurred and private coverage had been exhausted -- hopefully, a pair of conditions that would never occur.

QUESTION: 1. It would appear that the expeditious cleanup of the Three Mile Island site is in everyone's best interest. Do you believe that a prompt resolution of the financial uncertainties regarding the TMI cleanup is an essential first step in solving the cleanup problem. Please explain.

ANSWER: Definitely. GPU does not presently have the resources to fund the cleanup beyond the insurance proceeds available to it. Therefore, we understand that the cleanup effort is proceeding much more slowly than is optimally possible in order to preserve insurance proceeds until a funding solution can be put in place. The result is an unncecessary continuation of a health and safety hazard of unknown proportions in Central Pennsylvania.

QUESTION: 2. What is your view of the Federal, State, and ratepayer role and responsibility to the cleanup?

ANSWER: Financial responsibility for nuclear cleanup and restoration of property would ideally be allocated on insurance principles. Premium paid by the beneficiaries as a class would be aggregated and used to pay losses which might accidentally occur to one or more members of a class. For the future, we have suggested establishment of such a system; see answer to Question 7. No such arrangement, of course, was in effect to cover the loss at Three Mile Island. Therefore, a shared approach in effect negotiated by all interested parties would appear to be the only feasible approach. Governor Thornburgh's proposal that 25% of the cleanup cost come from the Federal Government, 25% from the electric utility industry and 50% from the 2 states and the ratepayers directly affected by the accident appears to us to be equitable, and we support Governor Thornburgh's proposal.

QUESTION: 3. How do you currently rate GPU's ability to obtain credit in the capital markets?

ANSWER: GPU is absolutely precluded from accessing the capital markets because of (1) its poor financial condition (i.e. inadequate earnings, the low ratings of its securities and the failure to have paid a dividend on its common stock for almost 2 years), (2) the uncertainties which surround the restart of TMI #1, (3) the grave uncertainties relative to funding of the cleanup which is clearly beyond GPU's current capacity, and (4) the significant uncertainties relating to a realization on, as well as recovery of, the $700 million investment in TMI #2. Our bank group is the only source of capital to GPU, other than the ratepayer, and our posture is currently one of working down our exposure to the lowest possible level.

QUESTION: 4. What is GPU's future as long term provider of electricity in its service area?

ANSWER: This is a question that really can't be answered at this point because we believe that it involves GPU reassuming all of the financial characteristics of a healthy electric utility. This means that cleanup cost fundings must be obtained, the uncertainty relating to the $700 million investment in TMI #2 must be removed and resolved in a financially acceptable manner, earnings and coverages must be restored, market rate dividends on common stock must be resumed and, in general, GPU must have full access to the capital markets for a full range of securities. All of this can happen, but it will take time and there are many potential pitfalls. On the other hand, if the Three Mile Island problem is not resolved in a financially prudent way relative to GPU so that its full financial health can be restored, we doubt that service deterioration can be avoided because GPU won't be able to attract the capital required to maintain its service area much less grow with it.

QUESTION: 5. What is the possibility of a GPU bankruptcy, and what would be the impacts on:

(a) the cost and reliability of continued service to GPU's customers;

(b) the cleanup operation at the TMI site; and

(c) the financial health of the electric utility industry?

ANSWER: Because of GPU's tenuous financial condition, bankruptcy is a distinct possibility at any time. And, certainly, if the system can't refund $85 million in public debt maturities during the First Quarter of 1983, we don't see how bankruptcy can be avoided. We doubt that GPU will be able to refund such maturities in the capital markets, even under the most favorable of circumstances relative to funding the cleanup and, thus, GPU must be prepared to meet these obligations with internally generated funds. This in turn requires that substantial rate awards be obtained no later than the First Quarter of 1982. Substantial rate awards, in turn, may depend on an affirmative decision on the restart of TMI #1 and having the federal government and industry participations in a cleanup program firmly committed to. Therefore, while bankruptcy may be avoided until early 1983, actions need to be in place in early 1982. There is still time to prevent bankruptcy, but, in our view, time is running out.

Our answers to the specific subsets of this questions are as follows:

(a) Large complex bankruptcies are costly and a GPU bankruptcy, being the first involving an electric utility in modern times, would be no exception. The proceedings themselves are expensive. Services generally become more expensive as suppliers operate with heightened perceptions of risk. And, access to credit and capital is virtually eliminated. Finally, if a plan of arrangement ultimately resulted from the proceeding, it is quite likely that the new capital structure would provide for current market rates of return versus the lower imbedded costs of the prebankruptcy structure. All of the increased costs associated with a bankruptcy would, unavoidably, fall on the GPU ratepayer and, with access to capital severely restricted or eliminated altogether, we don't see how service deterioration could be avoided.

(b) The reason GPU would have to file for protection under the bankruptcy laws would be its inability to meet its obligations when due. Therefore, if it couldn't meet current obligations when due outside of a bankruptcy proceeding, how could it expect to meet incremental cleanup obligations within a proceeding when capital resources would be expected to be all but non-existant? Therefore, we don't believe that a bankruptcy would help solve the cleanup funding problem and could, in fact, eliminate funding sources that might otherwise be available. For example, a bankruptcy proceeding could very well take away any incentive of the electric utility industry to participate in cleanup funding because (1) other utilities might be having capital market access problems of their own as a result of a GPU bankruptcy (as discussed in 5(c) below) and (2) because we believe their self-interest involves avoiding the bankruptcy in the first place. Bankruptcy solves none of the cleanup funding problems and probably compounds them.

(c) It is generally acknowledged that there is a greater perception of risk by investors in electric utility securities, especially those with a nuclear exposure, in the post TMI accident period and according to certain analysts, an incremental risk premium of as much as 50 to 100 basis points is now being paid by electric utilities when they issue securities. Therefore, the electric utility industry is already incurring a cost related to the accident and, to the extent that there is a lag in recovering such increased financing costs from its ratepayers, the accident is contributing to the financial deterioration within the industry. If GPU were to go bankrupt, we can only assume that the risk premium attaching to electric utility securities would increase, with the attendant consequences on the industry's financial health, and many electrics might not be able to access the market at all. The capital markets were thrown into turmoil in 1974 when Con Ed missed one dividend payment. Therefore, one can only guess as to the shock waves which would be created by an electric utility bankruptcy; a result which the "risk averse" electric utility investor perceives as impossible. The broadest and most serious impact of a GPU bankruptcy might well be on the ability of the electric utility industry to finance itself and, thus, for this reason alone bankruptcy should be avoided.

QUESTION: 6. Given the experience of the TMI accident, what is an appropriate level of property insurance coverage?

ANSWER: The accident at Three Mile Island has shown, among other things, the difficulty of establishing an appropriate level of insurance. It is clear, however, in retrospect, that the $300MM of site insurance which, at the time of the accident represented the maximum amount available, was grossly inadequate. We also believe that the $1 billion of site insurance being proposed by the EEI, while an improvement, is also inadequate. We are mindful that the cost to clean up TMI-2 has alone been estimated at $1 billion. This number does not include the investment in the unit at the time of the accident ($700MM) or the additional costs which will be required either to restore the unit to service or decommission it. Therefore, it could well be argued that the property and cleanup-related costs of the accident at Three Mile Island are in the vicinity of twice the $1 billion level of insurance being proposed by the EEI. It should also be noted that the construction costs of nuclear plants being brought into service now and in the future are on average well in excess to the $700MM cost of TMI-2, with some units projected to cost in excess of $3 billion.

QUESTION: 7. What actions have been taken, or should be taken, to ensure that that amount of protection is available in the event of a future accident?

ANSWER: Given the concerns we have expressed in (6) above, we believe it is necessary to consider establishing a mechanism to deal with those property and cleanup costs resulting from a nuclear plant accident which are in excess of coverages available from the private sector. The EEI has testified that it is working to increase coverage to $1 billion. The cost of plants and cleanup, however, as Three Mile Island has demonstrated, could be much in excess of that figure.

We perceive two key difficulties with the insurance question. First, there is a relatively small base -- that is, the number of nuclear plants -- from which to collect premiums. Second, there is the nature of catastrophe -- an event which, by definition, is highly unlikely to occur, but when it does, the financial consequences can be enormous. It is difficult, if not impossible, actuarially to rate such risks.

What appears to be required, therefore, is an umbrella of excess coverage beyond what the private sector has the capacity reasonably to provide. The umbrella would make payments after a catastrophic incident and internalize the cost by collecting premiums, retroactively, from all property insurance premium payers. We have reluctantly come to the conclusion that the Federal government is the only appropriate instrumentality to effect this arrangement.

A much less elaborate framework than that contemplated by S. 1606 could meet this need. All that seems required is standby authority in a federal agency such as the Nuclear Regulatory Commission or the Department of Energy to pay property damage claims resulting from an accident and exceeding the reasonably available amount of private coverage. Funds could be acquired by an agency borrowing from Treasury and repaid, with interest, from the receipts of licensee fees which the agency would be authorized to impose. There is no need for any separate fund, premium determinations or collections of reserves as contemplated by S. 1606. The federal governent would do nothing until after an accident had occurred and private coverage had been exhausted -- hopefully, a pair of conditions that would never occur.

QUESTION: 8. Summarize your group (agency) involvement in the TMI-2 cleanup.

ANSWER: Neither Citibank nor Chemical Bank is directly involved in the TMI-2 cleanup. We have functioned as agent and co-agent banks, respectively, for the GPU System's 45-Bank Revolving Credit Agreement since June of 1979.

Senator HEINZ. Thank you very much.

I'd like to call on Mr. Anthony May.

Mr. MAY. Thank you. I'd like to submit our full testimony for the record and just summarize at this time.

STATEMENT OF M. ANTHONY MAY, VICE PRESIDENT, L. F. ROTHSCHILD, UNTERBERG, TOWBIN, NEW YORK, N.Y., ACCOMPANIED BY EVAN J. SILVERSTEIN

Mr. MAY. My name is Anthony May. I am vice president of the securities and investment banking firm of L. F. Rothschild, Unterberg, Towbin. I manage the firm's fixed-income research department. My colleague is Evan J. Silverstein, also of L. F. Rothschild. We welcome this opportunity to present comments on S. 1606 and the development of Three Mile Island resolution strategy.

You have heard testimony today describing the need for a rapid consensus of the decontamination issue. We clearly support this point of view and share Governor Thornburgh's concern for the health and well-being of the population in the vicinity of the island. We are also concerned about the future of the electric utility industry and the threat that the response failure to TMI poses to all utilities, nuclear utilities, specifically, as well as to the ratepayers nationwide, to investors and to the national goal of energy self-sufficiency.

The electric utility industry is in fragile financial condition. It has withstood an oil embargo, a quadrupling of fuel.prices, the dual ravages of inflation and record interest rates, confiscatory regulatory policies, and an extraordinary burden of Federal regulation. Not surprisingly, investor confidence in the industry's financial viability has eroded to extremely low levels. In this context, the TMI accident assumes greater significance. The public needs to be guaranteed that the response to the health dangers posed by contamination accidents will be swift and decisive. The financial community needs to be reassured that investments in utilities will not be washed away by this, or future nuclear accidents. Addressing these uncertainties now will have the effect of containing the cost of future accidents and mitigating the steep price that ratepayers nationwide are paying for TMI. Given the seriousness of the situation, we present the following recommendations:

One, it is in the long-term economic and social interest of all ratepayers and consistent with the national goal of moving toward energy self-sufficiency that all parties agree to participate on a firm basis in a cost-sharing plan to decontaminate the Three Mile Island nuclear reactor; a cost-sharing plan be instituted this year; the financial integrity of General Public Utilities be safeguarded.

Two, Federal guidelines should establish the appropriate limits of nuclear property insurance based on the TMI cost experience and the value of the assets to be insured. If the private sector, in conjunction with the utility industry, is incapable of providing the necessary coverage as established by the Government, legislative action should be taken.

Three, in line with GAO's recommendation, it is suggested that the Nuclear Regulatory Commission and the utility industry coordinate and develop measures to respond to future large-scale contamination accidents.

S. 1606 addresses most of our recommendations by focusing on the two most urgent questions simultaneously, the TMI decontamination and the need to provide higher levels of nuclear property insurance. The limits of nuclear property insurance protection should not be determined arbitrarily or be constrained by the capacity available in the private sector. Soon, $1 billion of nuclear property insurance will be made available by the private sector. Judging from the TMI experience, and the escalation in nuclear property values, the amount to be offered will still be inadequate to cope with future largescale contamination accidents. TMI provides the opportunity to study insurance limit and pricing issues in a logical manner so as to devise a durable and economically acceptable solution. We suggest that the insurance pools, the utility industry, and the Federal Government collaborate in this effort with the understanding that the TMI decontamination must take precedent.

If a consensus on both parts of S. 1606 can be reached in a timely manner and the insurance issues can be fully addressed within the time frame of our recommendation, then we would support enactment of S. 1606 on the grounds that it would insure the success of the cleanup operation at TMI. TMI has already cost ratepayers nationwide a lot of money. We estimate that in the last 2 years they have been penalized more than the estimated $1 billion cost of cleanup. Moreover, if the cleanup continues to limp along with no sense of direction, the public may be fined up to $10 billion in higher rates over the next 20 years.

What they are paying for is risk, capital market risk, the higher cost of financing demanded of utilities by investors. It is an inescapable fact that the business risk associated with all utilities, but especially with nuclear companies, has risen materially in the 2½ years since the TMI accident. Consequently, so has the price electrics must pay in order to attract capital. In addition to the virulent increase in interest rates suffered in the last couple of years, the risk premium component of utility capital costs has expanded about 80 basis points, or 110 percent above the level that prevailed prior to TMI.

It should be understood that a risk-premium analysis of utility capital costs is subject to many limitations, and attempts to attribute variations in the cost of capital to specific events are bound to be imprecise. In recognition of the possible error factor, let's put aside the 80 basis points and ask a different question; namely, what decline in capital costs would be necessary to offset the industry's proposed $192 million cleanup contribution? The answer is roughly five basis points, or a reduction of one-twentieth of one-percent from current financing costs. That so small a change in capital costs should produce such dramatic results demonstrates that real savings can be produced by a normalization of the TMI/GPU situation, regardless of what the GPU component of prevailing risk premiums may be.

Our conversations with investors suggest that a more traditional relationship between the cost of utility capital, and that of other issuing sectors, is not likely to be restored until the problems of TMI have been dealt with, and until the financial risks associated with future contamination accidents have been minimized.

One other cost of capital consideration must be addressed, namely, the repercussions of a GPU default. There has not been a utility bankruptcy in at least 50 years. As a matter of fact, exclusive of GPU, only one major electric utility has missed a common stock dividend payment in the last half century. This enviable record, and the conviction of the investment public that electric utilities, despite their financial difficulties, are conservative, continue to justify the bulk of the money flow into the sector, even though investment returns have been disappointing.

If GPU becomes the first utility to violate this precept, the capital market repercussions are likely to be swift, severe and probably indiscriminate. The ensuing crisis of confidence would impair the capital raising functions so central to the well-being of the industry, and cause a sharp and prolonged upturn in financing costs for all utilities. A significant portion of the industry's multibillion investment in nuclear units under construction would be jeopardized, probably resulting in plant abandonments and write-offs. Future service reliability in areas of rapid population and industrial expansion could also be made vulnerable. The Nation's dependence on imported foreign oil would be prolonged and the future of nuclear power as an important energy source would be imperiled.

This chain of events need not depend on a financial accident, however. The broad response failure to TMI, combined with lack of guidance at the Federal level, the licensing breakdown at the NRC and other economic factors, have already weighed heavily on the decision to cut back on the nuclear option. Since TMI, 25 nuclear units have been canceled. In just the last several months, a 644 MW reactor in Indiana, and two 1150 MW units—(one in Massachusetts and the other in Missouri)—have been scrapped. Abandonment charges are running into the billions of dollars and the economic benefits of oil/nuclear displacement are being lost.

Prompt attention to the dangers introduced by GPU and the TMI accident would mitigate many of the pressures and costs addressed in our testimony. While the ultimate responsibility for the financial health of GPU rests with the State public service commissions and all studies seem to indicate that GPU's ratepayers could assume the cleanup responsibility unilaterally, a broadly based national effort would be the more effective and certain response to this and future contamination accidents.

Again I'd like to thank the committee for this opportunity to appear before you and welcome any questions that you may have.

[The prepared statement of Mr. May follows:]

TESTIMONY OF

M. ANTHONY MAY, VICE PRESIDENT
AND
EVAN J. SILVERSTEIN
OF
L.F. ROTHSCHILD, UNTERBERG, TOWBIN

Before the
Committee on Energy and Natural Resources
and the
Subcommittee on Nuclear Regulation
of the
Committee on Environment and Public Works

United States Senate

October 20, 1981

My name is Anthony May. I am a Vice President of the securities and investment banking firm of L.F. Rothschild, Unterberg Towbin. I manage the firm's fixed income research department. My colleague is Evan J. Silverstein, also of L.F. Rothschild. We welcome this opportunity to present comments on S. 1606 and the development of a Three Mile Island resolution strategy.

You have heard testimony today describing the need for a rapid consensus on the decontamination issue. We clearly support this point of view and share Governor Thornburgh's concern for the health and well-being of the population in the vicinity of the Island. We are also concerned about the future of the electric utility industry and the threat that the response failure to TMI poses to all utilities, nuclear utilities specifically, as well as to ratepayers nationwide, to investors and to the national goal of energy self-sufficiency.

The decontamination of the TMI reactor is a national problem that demanded a solution two years ago. While we applaud the efforts of all who have stepped into the policy void, it is also clear that the federal government, the electric utility industry, the states of Pennsylvania and New Jersey and the ratepayers of Pennsylvania and New Jersey have provided preciously little decontamination assistance so far.

The electric utility industry is in fragile financial condition. It has withstood an oil embargo, a quadrupling of fuel prices, the dual ravages of inflation and record interest rates, confiscatory regulatory policies and an extraordinary burden of federal regulation. Not surprisingly, investor confidence in the industry's financial viability has erroded to extremely low levels. In this context, the TMI accident assumes greater significance. The public needs to be guaranteed that the response to the health dangers posed by contamination accidents will be swift and decisive. The financial community needs to be reassured that investments in utilities will not be washed away by this, or future nuclear accidents. Addressing these uncertainties now will have the effect of containing the cost of future accidents and mitigating the steep price that ratepayers nationwide are paying for TMI. Given the seriousness of the situation, we present the following recommendations:

1) It is in the long-term economic and social interest of all ratepayers and consistent with the national goal of moving toward energy self sufficiency that:

   a) All parties agree to participate on a firm basis in a cost sharing plan to decontaminate the Three Mile Island nuclear reactor.
   b) A cost sharing plan be instituted this year.
   c) The financial integrity of General Public Utilities be safeguarded.

2) Federal guidelines should establish the appropriate limits of nuclear property insurance based on the TMI cost experience and the value of the assets to be insured. If the private sector, in conjunction with the utility industry, is incapable of providing the necessary coverage as established by the government, legislative action should be taken.

3) In line with GAO's recommendation, it is suggested that the Nuclear Regulatory Commission and the utility industry coordinate and develop measures to respond to future large-scale contamination accidents.

In reference to point one, we note that the longer it takes to identify cleanup fund and the longer GPU remains financially crippled, the greater the chance that all safety and decontamination responsibilities will fall on the NRC.

S. 1606 addresses most of our recommendations by focusing on the two most urgent questions simultaneously---the TMI decontamination and the need to provide higher levels of nuclear property insurance. The limits of nuclear property insurance protection should not be determined arbitrarily or be constrained by the capacity available in the private sector. Soon, $1 billion of nuclear property insurance will be made available by the private sector. Judging from the TMI experience and the escalation in nuclear property values, the amount to be offered will still be inadequate to cope with future large scale contamination accidents. TMI provides the opportunity to study insurance limit and pricing issues in a logical manner so as to devise a durable and economically acceptable solution. We suggest that the insurance pools, the utility industry and the federal government collaborate in this effort with the understanding that the TMI decontamination must take precedent.

If a consensus on both parts of S. 1606 can be reached in a timely manner and the insurance issues can be fully addressed within the time frame of our recommendation, then we would support enactment of S. 1606 on the grounds that it would ensure the success of the cleanup operation at TMI.

There are several other features of S. 1606 which we wish to address:
1) We can find little justification for administration of the supplemental insurance fund by DOE or any other federal entity when the private sector is capable of administering the daily operations and planning of the fund.
2) As reinforced in the body of our testimony, we believe that an equitable cost sharing plan should include all privately owned electric utilities and all state and federal authorities benefiting from nuclear power, regardless of ownership interest, as well as reactor manufacturers.

Because our profession is to assess the financial condition of electric utilities and to work closely with the large institutional suppliers of capital to the industry, we are best suited to interpret the TMI response failure from a broad capital market perspective. From that vantage point, the direct and indirect hidden costs of TMI are substantial.

TMI has already cost ratepayers nationwide a lot of money. We estimate that in the last two years they have been penalized more than the estimated $1 billion cost of cleanup. Moreover, if the cleanup continues to limp along with no sense of direction, the public may be fined up to $10 billion in higher rates over the next 20 years

What they are paying for is risk--capital market risk--the higher cost of financing demanded of utilities by investors. It is an inescapable fact that the business risk associated with all utilities, but especially with nuclear companies, has risen materially in the two and a half years since the TMI accident. Consequently, so has the price electrics must pay in order to attract capital. In addition to the virulent increase in interest rates suffered in the last couple of years, the risk premium component of utility capital costs has expanded about 80 basis points or 110% above the level that prevailed prior to TMI.

It should be understood that a risk premium analysis of utility capital costs is subject to many limitations, and attempts to attribute variations in the cost of capital to specific events are bound to be imprecise. In recognition of the possible error factor, let's put aside the 80 basis points and ask a different question, namely, what decline in capital costs would be necessary to offset the industry's proposed $192 million cleanup contribution? The answer is roughly five basis points, or a reduction of 1/20 of one percent from current financing costs. That so small a change in capital costs should produce such dramatic results demonstrates that real savings can be produced by a normalization of the TMI/GPU situation, regardless of what the GPU component of prevailing risk premiums may be.

The risk premium assumes greater significance when weighed against the industry's huge forward capital expenditure program which is projected at nearly one trillion dollars over the next 20 years. The sale of common stock, preferred stock and debt securities in the financial markets is expected to provide about $586 billion or 61% of the total.

Our conversations with investors suggest that a more traditional relationship between the cost of utility capital and that of other issuing sectors is not likely to be restored until the problems of TMI have been dealt with, and until the financial risks associated with future contamination accidents have been minimized.

One other cost of capital consideration must be addressed, namely the repercussions of a GPU default. There has not been a utility bankruptcy in at least fifty years. As a matter of fact, exclusive of GPU, only one major electric utility has missed a common stock dividend payment in the last half century. This enviable record and the conviction of the investment public that electric utilities, despite their financial difficulties, are conservative, money good investments, continue to justify the bulk of the money flow into the sector, even though investment returns have been disappointing. If GPU becomes the first utility to violate this precept, the capital market repercussions are likely to be swift, severe and probably indiscriminate. The ensuing crisis of confidence would impair the capital raising functions so central to the well-being of the industry, and cause a sharp and prolonged upturn in financing costs for all utilities. A significant portion of the industry's multi-billion investment in nuclear units under construction would be jeopardized, probably resulting in plant abandonments and write-offs. Future service reliability in areas of rapid population and industrial expansion, could also be made vulnerable. The nation's dependence on imported foreign oil would be prolonged and the future of nuclear power as an important energy source would be imperiled.

This chain of events need not depend on a financial accident, however. The broad response failure to TMI, combined with lack of guidance at the federal level, the licensing breakdown at the NRC and other economic factors, have already weighed heavily on the decision to cut back on the nuclear option. Since TMI, 25 nuclear units have been cancelled. In just the last several months, a 644 MW reactor in Indiana, and two 1150 MW units (one in Massachusetts and the other in Missouri), have been scrapped. Abandonment charges are running into the billions of dollars and the economic benefits of oil/nuclear displacement are being lost.

There is another aspect of the TMI response failure that is worth mentioning. When investors lose confidence in an industry and feel that they can no longer quantify or sustain the risks inherent in their holdings, there is a tendency to reduce financial exposure to the issuing sector. Simply stated, if an industry suffers constant blows to its financial integrity, lenders with the flexibility to fulfill their funding requirements in other areas of the market will do so. In the last 20 years, the utility industry has suffered from just such flights of capital. Traditional utility investors have become more miserly in their capital contributions and the marginal investor more difficult to attract There have been instances in the past of companies being forced to slow down construction or sell off generating projects, because they lacked the wherewithal to attract sufficient capital.

Prompt attention to the dangers introduced by GPU and the TMI accident would mitigate many of the pressures and costs addressed in our testimony. While the ultimate responsibility for the financial health of GPU rests with the state public service commissions and all studies seem to indicate that GPU's ratepayers could assume the cleanup responsibility unilaterally, a broadly-based national effort would be the more effective and certain response to this and future contamination accidents.

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M. ANTHONY MAY/DEBT
EVAN J. SILVERSTEIN/EQUITY

April 8, 1981

THE ELECTRIC UTILITY INDUSTRY:
THE COST OF CAPITAL EFFECTS OF THE THREE MILE ISLAND MISHAP

INTRODUCTION

The March 28, 1979, nuclear accident at Three Mile Island, the related licensing moratorium on nuclear power plants along with the growing threat of insolvency at General Public Utilities, and the poor 1980 financial performance of the utility industry, all contributed to lowering the risk threshold and raising the return requirements of suppliers of utility capital over the last two years. Ballooning interest rates have pushed the cost of utility debt and equity capital to record-breaking levels while the risk component of these costs has also expanded to an all-time high. In our opinion, long term utility lenders could demand well above historical risk premiums so long as events at General Public Utilities appear to threaten the stability of the industry. As the danger of bankruptcy subsides, the risk-aspect of the cost of capital can be expected to follow. But if the company is forced into reorganization, examples in other markets suggest that the ensuing crisis of confidence would impair the capital raising functions so central to the well-being of the utility industry, and cause a sharp and prolonged upturn in risk premiums. A significant portion of the industry's estimated $100 billion investment in nuclear units under construction representing about 50% of existing capitalizations would be jeopardized, resulting in plant abandonments and write-offs (units in operation are not likely to be affected). Future service reliability, not to mention the future of nuclear power as an important energy source, could be compromised by this cascade of events. Ratepayers nationwide would pay a hard dollar price for a bankruptcy that could have been avoided.

A risk premium analysis of utility capital costs is subject to many limitations. The pricing structure and fickle psychology of the capital markets are the product of almost infinite influences. Attempts to attribute variations in the cost of capital to specific events, by eliminating all exogenous factors, are bound to be imprecise. Nonetheless, we have worked through the theoretical exercise of breaking down utility returns into their various components so as to depict, in rough terms, the side effects of a default. It is suggested, however, that simple logic and a basic understanding of the capital markets are the tools that will provide the most useful answers.

The capital markets are driven by continuous adjustments in the risk/reward relationship which, among other factors, is influenced by the supply of and demand for securities, the level and stage in the interest rate cycle, the financial strength of the issuer, alternative investment opportunities and, in the case of debt obligations, by the specific terms of the contract between borrowers and lenders: maturity, coupon, size of issue, sinking fund features and call protection are all matters of vital interest to both parties. As the risk side of the equation expands, borrowers are forced into making long term contractual concessions in order to attract lenders. If there is a dramatic or unexpected increase in underlying business risk, it is possible for all but the highest quality issuers to be closed out of the capital markets for a period of time until either a "fix" is devised or until reward standards are brought into line. Either way, in the aftermath of a shock, traditional lenders have a tendency to cut back their exposure to the issuing sector, proportionately reducing future capital dedications and driving up capital costs. If an industry suffers constant blows to its financial integrity, lenders with the flexibility to fulfill their funding requirements in other areas of the market will abandon the troubled sector altogether.

In the last 20 years, the utility industry has suffered from just such flights of capital, the effects of which cannot be measured in dollars and cents. The industry must take steps to stem the capital drain and reduce the financial impact of costly contractual concessions. To this end, it would be wise for investor-owned utilities to close ranks and play an aggressive leadership role in defusing the GPU situation. Although there are no easy or possibly even palatable solutions, the least deleterious method of restoring investor confidence and ensuring the safety of residents in the TMI area appears to revolve around a broad and equitable sharing of the nuclear clean-up costs. Utilities around the country should be prepared to make modest financial sacrifices in order to avoid greater future perils, for no matter how far they are from Harrisburg, electric companies share a common bond in the capital markets.

COST OF DEBT CAPITAL

As mentioned, the risk component of borrowing costs is difficult to measure and can not be reliably allocated to specific events. For these reasons, and because of the tremendous volatility in the debt markets, the return characteristics of long utility bonds over the last 16 years have been evaluated by grouping the data into broad time categories, a smoothing procedure which sacrifices a degree of precision so as to provide a clearer picture of historical trends.

Table 1 provides both absolute and incremental risk premium results from 1965 to February 28, 1981, for a representative slice of the investor-owned utility industry. As defined, the risk premium is the secondary market yield spread between long utility bonds and 20-year U.S. Government Treasury issues, adjusted for the yield spreading phenomenon which occurs between lower quality issuers and riskless contractual debt obligations during periods of rising interest rates. The residual of these adjustments, the risk premium, characterizes the intrinsic business risk embedded in the industry.

We have focused our analysis on fluctuations in the risk premium of debt securities following two events widely separated in time and causality: The Consolidated Edison common stock dividend cut of March, 1974, and the TMI 2 malfunction of March 28, 1979. It is rare in utility financial history for events of a local nature to have national repercussions and it is unprecedented for a regulated utility company to be faced with insolvency. The Con Edison situation offers the only guidepost for how the loss of investor confidence in one utility can lead to higher capital costs for the entire industry.

In the relatively trouble-free, growth-oriented period of the early 1960s, utilities were charged with an average adjusted risk premium of 30-40 basis points. With inflation heating up, the economics of the industry in a state of flux and the energy crisis not far around the corner, risk premiums rose to 70-75 basis points in the late 1960s and early 1970s before declining to 55 basis points just prior to the Con Edison event. At that time, the risk premium accounted for a modest 6.9% of absolute debt financing costs. In the 16 months following the dividend cut, skeptical investors forced drastic changes in the composition of capital costs. Relative premiums penetrated into triple-digit territory, picking up 52 basis points in the first ten months and another 39 basis points in the following six month period. At their peak, risk premiums rose 165.5% and accounted for 14.4% of the total cost paid by utilities for new debt capital. As it became evident that the Con Edison example was not contagious, fears abated and so did the risk portion of capital costs. In the 15 months from January, 1978, to March 1979, before GPU perpetuated a new crisis of confidence, premiums shrank to a 7.5% share of total borrowing costs.

Utility risk premiums again exploded after the TMI accident, picking up approximately 73 basis points in the two years following the nuclear malfunction. To date, market reaction to events at GPU closely parallels the Con Edison experience. But at the moment, significant differences exist between the two situations. By all accounts, GPU will face extreme financial pressures for years to come and the specter of default may hang over the industry until the TMI 2 liability question is resolved. On the other hand, the Con Edison crisis was longer on symbolism than on substance. In retrospect, the uncertainties were less pervasive and the problems more localized. Risk premium levels cooled as the realization grew that other utilities would not follow down the same road. Unless strong external reassurances are forthcoming, existing risk premiums are less certain to contract because the GPU affair has exposed serious faults in the system. First, it is now obvious that the nuclear assets collateralizing the contractual debt obligations of utilities are woefully under-insured against property damage. Second, it has long been an article of faith among creditors that regulated utility companies, charged with serving the public, would never be allowed, much less prodded, to walk the gang plank. It has been assumed that a regulated environment provides greater protection against bankruptcy than the world of unbridled competition where greater business risks are offset by higher return expectations. This long standing tenet may be challenged by utility creditors if progress toward averting insolvency is not forthcoming.

Not evident in the statistical presentation on page 5 is the unequal market allocation of risk between nuclear and non-nuclear utilities since the TMI accident. In the period from 1976 through 1978, nuclear companies in general were favored in the credit markets, paying roughly 20-30 basis points less for new debt capital than non-nuclear companies. Now that nuclear power is no longer considered an attractive asset but has for some become a serious liability from a financing standpoint, non-nuclear utilities on average command a slightly lower cost of capital.

For every year that base risk premiums remain at current levels (in the 140-150 basis point range or 70-80 basis points above pre-TMI levels), financing costs are estimated to rise $90 million (pre-tax), assuming total yearly debt requirements of $11-12 billion. In absolute terms, one year's financing at prevailing risk premiums carries a $1.8 billion lifetime price tag, assuming the debt obligations have a 20 year average life. Perhaps it is more realistic to present this liability in terms of its discounted present value which totals $672 million.

The possibility that new risk-bearing concepts will be introduced in the event of a utility default has been noted. By relying on a comparison with the Con Edison example, it is safe to assert that the default risk has yet to be discounted to any great extent. Despite the potential for imprecision and, lacking solid historical guidelines by which to gauge the default risk for the utility industry, we chose to examine the effects of the 1970 Penn Central bankruptcy on railroad bonds. Although the railroad's problems were widely recognized and the industry was no stranger to bankruptcies, long term debt costs (interest rate adjusted) rose over 100 basis points in the three months after the Penn Central debacle and the borrowing surcharge remained essentially intact for roughly two years after that. But since the industry (unlike the utilities now) had little need to sell first mortgage bonds secured by right-of-ways in the following years, perhaps the most serious side effects of the Penn Central bankruptcy were felt in the commercial paper market, which reacted by virtually grinding to a halt. Pressure points developed for other companies (Chrysler and Lockheed, for example) which, in the immediate aftermath, were unable to replace the run-offs in their commercial paper volumes.

If 100 basis points is the minimum default premium assigned to the utility industry, the related increase in borrowing costs reaches significant proportions. In the event of bankruptcy (and a base risk premium in the 240-250 basis point range), financing costs are estimated to rise $216 million (pre-tax) per year for every year the default surcharge remains intact. In other words, the industry and ratepayers would be required to ante up a total of approximately $4.3 billion (in absolute terms) over the estimated 20 year life of bonds issued one year after a GPU bankruptcy. If this liability is discounted at a 12% rate, it corresponds to a present value of $1.6 billion. It is safe to reason that creditors would not shrug off a utility bankruptcy and that capital costs would not peak and then decline in just a year's time. Therefore, the cost of debt capital raised by utilities would likely reflect a default premium in subsequent years.

TABLE 1

RISK PREMIUMS ON LONG TERM UTILITY DEBT (A)

	CON EDISON PERIOD						GPU PERIOD					
	Aver. TSY Yields	Risk Prem. in Basis Points (BP)	BP Incr.	% Change in Risk Prem.	Cum Incr. in Risk Prem. (BP)	% Change in CUM Risk Premium	Aver. TSY Yields	Risk Prem. in Basis Points (BP)	BP Incr.	% Change in Risk Prem.	Cum Incr. in Risk Prem. (BP)	Change in cum Risk Premium
Period immediately Prior to event (B)	7.17%	55	-	-	-	-	8.56%	71	-	-	-	-
Average of following 10 months	8.17	107	52	94.5%	52	94.5%	9.40	98	27	38.0%	27	38.0%
11-16 months	8.03	146	39	36.5	91	165.5	11.18	150	52	53.1	79	111.3
17-22 months	8.35	127	-19	-13.0	72	130.9	11.59	123	-27	-18.0	52	73.2
23-34 months	7.86	95	-32	-25.2	40	72.7	13.58	151	28	22.8	80	112.7(C)
35-46 months	7.67	76	-19	-20.0	21	38.2						
47-60 months	8.56	71	- 5	- 6.6	16	29.1						

NOTES TO TABLE 1

(A) The following information explains some of the theory and eccentricities of the risk premium index:

1) The risk premium corresponds to the yield spread between long utility bonds and 20 year Treasury issues. The spread has been adjusted for the traditional effects of interest rate volatility on lower quality issuing sectors. To achieve this result, the utility/Treasury spread was adjusted by the changing spread between utilities and Triple-A telephones. Telephone rather than industrial bonds were chosen as the adjustment factor because of their quality and business homogeneity and because, like utilities, they do not have active sinking funds which can create price abnormalities under certain conditions.

It can be argued that by using telephone securities, a strong triple-A group, to adjust for interest rate variations in electric utilities, a weakening Single-A industry, the risk premium is understated in bull markets and overstated during periods of rising rates. This would probably be true but for an offsetting consideration. During a cycle of rising rates and slow financing activity, the long utility market becomes inactive and generally less responsive to changes in interest rates than secondary telephone issues, which usually maintain a higher degree of liquidity. Therefore, at market peaks, risk premium expansion is constrained by the lack of a solid utility market.

Such a situation is thought to have occurred in the last half of 1980 when, as can be seen in Table 1, the risk premium dropped 27 basis points. This anomaly was probably caused by the artificial nature of the secondary utility market in the last six months of 1980 (additional explanations for this variance are given in note 3). Moreover, in the third and fourth quarters, telephone yields probably reflected growing investor concerns about the financial stability of the industry in light of anti-trust developments and the serious problems being encountered by Pacific Telephone in California.

2) The utility index is comprised of 30 bonds from all rating classifications (except Triple-A) having an average coupon of 13.0% and term to maturity of 28 7/8 years. Seasoned issues trading at a discount to par were used so that at no time during the survey period would call price influence price movements. Secondary market securities rather than new issue offerings were used to calculate risk premiums for several reasons. First, the supply of long (20 years or more) utility bonds has been very erratic in the last several years.

There have been long periods of time when long new issue volume dried up (so that consistent new issue levels were impossible to come by) and the industry reverted to selling intermediate term bonds. This case was most noticeable in the last six months of 1980 when the bond market rally lost momentum and interest rates again began to ascend rapidly. There were 84 public offerings of utility debt totaling $6.4 billion last year, of which $4.0 billion or 62% represented the sale of long term securities with the remaining 38% falling into the intermediate classification (6-10 year maturities). In the July-December, 1980 period, only 15 long utility issues were marketed, totaling $1.1 billion and accounting for only 17.7% of all debt issued during the year and 28.6% of all new debt with term structures of 20 years or more. A mere three offerings of $100 million or more in size were sold as compared with 14 issues in the first half. Liquidity in the long utility market became more of a problem in the fourth quarter when only five small issues totaling $325 million were offered. By comparison, $1.2 billion of intermediate term debt (16 issues) was sold in the third and fourth quarters. These offerings accounted for 51% of all new debt raised in the last half of 1980. Second, aggressive new issue pricing frequently resulted in unrealistic yield levels which were adjusted upward once the issue was free to trade.

(B) The 55 basis point risk premium that existed in the utility industry prior to the Consolidated Edison dividend cut (March, 1974) is the average adjusted yield spread between long utility and 20 year Treasury issues over the January, 1973 through February, 1974 period. The calculated risk premiums over the 1968-72 span were 59, 72, 73, 78 and 61 basis points, respectively. By the same token, 71 basis points represents the existing risk premium (over the January, 1978 through March, 1979 period) prior to the TMI accident on March 28, 1979.

(C) For the first nine months of 1981 only.

COST OF EQUITY CAPITAL

In our determination of the cost of equity capital, we have followed the risk premium theory[1], which implies that the equity holder would require a fixed incremental risk premium over the above the cost required by the debt holder. In keeping with this theory, we use the findings from the study on debt costs to estimate the impact of the higher equity costs on the electric utility industry. Our assumption is that the incremental cost of debt capital stemming from the TMI accident has also raised the cost of equity capital by an equivalent amount so as to maintain a constant risk premium relationship. We then quantify the effect that changes in stock prices necessary to offset specific risk premium levels could have on the industry's equity financing needs over the next five years and the corresponding impact on earnings dilution and dividend payments. This approach enables the potential increase in equity financing costs to be more easily demonstrated and understood. We point out, however, that while our study shows that 75 basis points appears to be the current risk premium experienced by the industry on the debt side, we chose to demonstrate the financial effects of a range between 25-100 basis points, presented in 25 basis point increments. This allows us to easily determine how much of a reduction can be made in the higher equity capital costs already imbedded in the industry if an acceptable solution to the GPU problem is worked out, since we are not sure if all of the 75 basis points would dissipate. On the other hand, this presentation also provides an estimation of what the effect of higher capital costs would be if bankruptcy were to occur. While we cannot accurately determine how much this increase would be, we have previously indicated that if the railroad situation is used as a guide, 100 basis points appears likely.

In order to more easily understand the approach, a quick explanation of the effects of selling stock above or below book value is helpful. On page 9 we outline three cases which demonstrate the impact on earnings and book value if shares are sold within a 10% range of book value. As can be seen, if the equity return is held constant in each case, earnings and book value differ under varying stock price assumptions. If stock is issued 10% above book (example C), earnings and book value rise from the initial levels while the number of new shares issued will be lower than under scenario A or B. On the other hand, if new stock is issued below book value the reverse occurs.

To indicate the cost of this effect, let us look at example B. It can be seen that earnings are lower than in example A ($1.98 versus $2.00), while the number of shares outstanding (222 versus 220) is higher. Our approach is to calculate the added amount of revenues that would be needed to achieve the same $2.00 that was earned in example A when stock was sold at book value.

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[1] *One of the major assumptions of the risk premium theory is that the constant risk premium relationship holds only if the company is perceived as an ongoing concern. If bankruptcy or insolvency become considerations, it is very likely that the equity holder will require some additional return over and above that required by the debt holder to compensate for their weaker position with regard to the claims on the assets of the firm.*

In this case, we would take the $0.02 difference and multiply it by the total shares outstanding to arrive at an after tax cost and then, using the industry tax rate, convert this into a pre-tax figure. With regard to the dividend payments, we look at the increased shares that had to be issued because of a lower stock price (2 shares in the example) and multiply that by the industry dividend rate to determine the added dividend payments that are necessary.

Based on these examples, we then extrapolate this effect to the entire electric utility industry based on actual industry statistics and projections for the next five years. We first adjust the average stock price of the industry to reflect a 25-100 basis point change in the current yield. The different stock price stemming from this adjustment is then applied to the 1981-1985 dollar amounts of estimated equity financing to arrive at the theoretical level of outstanding shares, book value and earnings assuming a constant return on equity. Then following our example in table 2, we estimate how much revenue would be needed to offset the dilution of these financings compared with what the result would be if the 25-100 basis point increments did not exist. In addition, on the same basis we calculate what the added dividend payments would be because of the higher level of shares outstanding. The findings of this analysis are presented on page 10.

As can be seen from the following table, the increased costs the industry would experience are significant. For instance, following the scenario that the industry has already experienced a 75 basis point increase in risk premium (Case three), additional rate relief approximating $80 million in the first year would be needed to offset the earnings dilution stemming from the increased shares sold. Moreover, over a five year period the cumulative effect would approximate $1.3 billion. Added to this is the fact that the industry would have to pay out an additional $42 million of dividends in the first year as a result of the added shares sold because of lower stock prices. If this amount is again accumulated over a five year period of time, the additional pay out would approximate $735 million. Our dividend analysis assumes that the current industry dividend rate is held constant, a conservative expectation by historical standards.

EFFECTS OF SELLING STOCK AT 10% ABOVE OR BELOW BOOK VALUE

	Present	A	B	C
Common Equity($)	2,000	2,200	2,200	2,200
Return on Equity(%)	20	20	20	20
Net for Common($)	400	440	440	440
Shares Outstanding	200	220	222	218
Earnings Per Share($)	2.00	2.00	1.98	2.02
Book Value Per Share($)	10.00	10.00	9.91	10.09

A) Sold 20 shares of stock at book value.
B) Sold 20 shares of stock at a 10% discount from book value.
C) Sold 20 shares of stock at a 10% premium to book value.

ESTIMATED INCREMENTAL COST OF EQUITY CAPITAL[2]

	1981	1982	1983	1984	1985	Cumulative Total 1981-1985
Case 1 - 25 Basis Points						
Increase in Shares Outstanding	07.0 mil.	08.0 mil.	09.0 mil.	09.0 mil.	10.0 mil.	43 mil.
Cost of Earnings Dilution Pre/Tax($)	24.7 mil.	42.7 mil.	28.0 mil.	31.6 mil.	45.5 mil.	487 mil.
Amount of Increased Dividends($)	13.4 mil.	15.4 mil.	17.3 mil.	17.3 mil.	14.2 mil.	234 mil.
Case 2 - 50 Basis Points						
Increase in Shares Outstanding	15.0 mil.	16.0 mil.	18.0 mil.	19.0 mil.	23.0 mil.	91 mil.
Cost of Earnings Dilution Pre/Tax($)	55.5 mil.	67.0 mil.	51.1 mil.	55.2 mil.	68.4 mil.	874 mil.
Amount of Increased Dividends($)	28.8 mil.	30.7 mil.	34.6 mil.	36.5 mil.	44.2 mil.	488 mil.
Case 3 - 75 Basis Points						
Increase in Shares Outstanding	22.0 mil.	24.0 mil.	28.0 mil.	29.0 mil.	35.0 mil.	138 mil.
Cost of Earnings Dilution Pre/Tax($)	80.0 mil.	100.2 mil.	79.8 mil.	93.9 mil.	101.7 mil.	1330 mil.
Amount of Increased Dividends($)	42.2 mil.	46.1 mil.	53.8 mil.	55.7 mil.	67.2 mil.	735 mil.
Case 4 - 100 Basis Points						
Increase in Shares Outstanding	29.0 mil.	31.0 mil.	36.0 mil.	38.0 mil.	46.0 mil.	180 mil.
Cost of Earnings Dilution Pre/Tax($)	110.0 mil.	119.9 mil.	115.6 mil.	116.6 mil.	134.5 mil.	1748 mil.
Amount of Increased Dividends($)	55.7 mil.	59.5 mil.	69.1 mil.	73.0 mil.	88.3 mil.	951 mil.

[2] *The table is designed to show the potential costs to the electric utility industry based on various assumptions for the change in cost of equity capital (25-100 basis points). For instance, the 75 basis point assumption in case 3 can be used to estimate the added cost we believe is already built in because of a higher risk premium. On the other hand, if an additional 100 basis points is likely under a bankruptcy scenario, the cost presented in case 4 would have to be added to the determinations of case three to arrive at a total potential cost to the industry. Looking at it another way, if one were to assume the cost of equity would decline by any of the increments we show, it could easily be determined what the reduced cost to the industry could be.*

[3] *The cumulative five year total is a weighted average of each year's cost. For instance, year 1 is weighted five times, year 2 four times, year three, three times and so on. The increase in shares outstanding is the summation of each year's total.*

As mentioned earlier, these costs have been estimated under four scenarios beginning with a 25 basis point premium and working up to 100 basis points in equivalent increments. While the results followed the previously established findings that the industry's incremental cost of capital hovers around 75 basis points today, we point out even a 25 basis increment produces substantial cost. Under the first scenario, the industry would need $25 million of additional rate relief in the first year and $174 million over five years. However, the ratepayer would cumulatively incur almost $500 million of increased costs over the five year time frame. In addition, added dividend payments would approximate $13 million in the first year and accumulate to 234 million over five years. It is noted that these costs are estimated only over a five year period of time but would continue to accumulate infinitely. In conclusion, we find that even under a conservative assumption, increased cost of equity capital that could be experienced by the industry is substantial.

CONCLUSION

Obviously, the most efficient method of dealing with the problems posed by GPU is to find the least expensive and safest long run solution. If the utility industry and other responsible authorities decide to take a hands-off approach, thereby increasing the possibility of bankruptcy, very possibly they will have opted for the least constructive and most costly solution. Our findings suggest that the higher capital costs incurred by the industry in just the last two years are substantial on a cumulative basis and could grow significantly greater if GPU defaults.

If it is accepted that the risk premium underlying new debt and equity offerings has increased approximately 75 basis points in the last two years, and that the financing surcharge will remain essentially intact as long as GPU is on the critical list, then based on 1981 new debt and equity financing requirements of $16 billion, incremental capital costs are estimated to total $170 million. When incremental equity and debt costs are aggregated over 20 years, the price tag (in absolute dollars) of one year's financing at existing risk premium levels totals $3.4 billion. Discounting this figure at a 12% rate yields a present value of $1.3 billion.

If the industry incurs an additional 100 basis point penalty as the consequence of a GPU bankruptcy, then the incremental cost of raising $16 billion in debt and equity in 1981 would total an estimated $407 million annually. In absolute terms, one year's capital requirements financed at 100 basis points above prevailing risk premiums would total $8.1 billion over the next 20 years. Again, discounting this total at a 12% rate yields a present value of $3.0 billion. In neither of these examples have we included the many hundreds of millions of dollars of additional common stock dividends that would be paid out because of the additional shares that would have to be issued due to lower stock prices.

ADDITIONAL INFORMATION AVAILABLE UPON REQUEST

Senator **Heinz**. Thank you very much, Mr. May.

Let me ask Mr. Schmalz; Mr. May for example, has said the utility industry is paying a higher premium when it goes to the market to raise capital and he's discussed some of his reasons for the risk premium that the utility industry is paying, and he estimates it at a cost of $10 million over the next 20 years if my memory serves me correctly. It could be a lot worse if GPU should suffer a financial collapse. And unless I misread his testimony he says the only way that that risk premium is going to be reduced is to take two steps, one to deal with the GPU-TMI problem; No. 2, to deal with the insurance problem.

And my question to you is, Do you believe the problem investors have with the industry will be sufficiently addressed if you do what you said that you're going to do which is not inconsiderable but is certainly less than a billion dollars at this point?

Mr. **Schmalz**. Well let me say that I have a slightly different point of view from Mr. May. We do think the Government should not be in the banking business, no more than they should be in the electric production business or the insurance business. These are very complicated issues and the question of how much risk premium should be paid by investors in nuclear powerplants is probably well up to the market conditions as is the cost of insurance. What we're suggesting is we can take care of the cleanup of the Three Mile Island site, at least under the proposals today. They look very promising.

That alone should be, and I think everyone would agree, a powerful step forward in reducing the apprehension and risk concerned with nuclear power. We hear Chairman Palladino say today that while he thought $1 billion was a little on the low side, $1 billion would take care of accidents similar in scope to Three Mile Island. No one can have perfect security. He hasn't done any studies and no one has done any studies as to what the maximum possible cleanup costs might be, but he said, well no one can guarantee that they will never go over a billion dollars.

There was testimony that with the experience that has been developed and the research and development work that will be done on this project, that it would be possible to save a lot of money. The fact that an insurance program does not have in place at the time of loss enough money to complete the cleanup doesn't necessarily mean that the cleanup won't be completed expeditiously, and that funds cannot be accumulated in a reasonable cost-effective manner.

The problem with the Three Mile Island accident is the cost was so enormous in relation to the amount of available insurance, the regulatory delays, the fact that it was the first accident we had, it just never got started promptly and it's sort of festering there and creating this lack of confidence. It certainly would not happen with $1 billion to $1½ billion of formal insurance mechanisms in place in my judgment.

Senator **Heinz**. If you are wrong and that is a decision that we're going to have to make, I don't know that any of us have made it per se, but if you are wrong, the utility industry would be paying $10 million extra in costs which would be passed on to somebody, to ratepayers or somebody. So my question is this, From your conversations with your customers who are the utility industry, do you believe that they understand that they are paying risk premium and it's in their interest not to pay it and if they do have awareness of the first two, do they think that a billion dollars will get them off the hook and avoid these costs, or don't they care?

Mr. SCHMALZ. They of course have to speak for themselves, but I did hear some indication today that they feel that a billion dollars is a reasonable amount at this time. They do believe and we believe that a billion dollars is possible very quickly, much more than a billion dollars will be available at a time. Certainly the number of operating units with any kind of program that is based on the retrospective assessment, will automatically increase the amount of property coverage available simply by the fact that they've got more utilities who are able to contribute. So I think there is some evidence to suggest that they feel comfortable with the billion dollars with the possible increase over a reasonable period of time.

Senator HEINZ. Let me ask Mr. May if he feels that he has a different point of view.

Mr. MAY. I think the investor naturally has a slightly different point of view. It used to be before the Three Mile Island accident that nuclear utility companies could raise debt at a slightly cheaper rate than a nonnuclear utility company. Now since the Three Mile Island accident the awareness of all the problems of a nuclear utility, that hasn't been the case. That nuclear utility companies are charged with a high risk premium as a result of the problems that have come to light. And one of these problems is the fact that investors have come to recognize that their nuclear assets that have collateralized their securities are underinsured. I think from an investor's point of view, certainly $2 billion insurance is better than one and three is better than two. But what they are concerned with is the fact that in the event of an accident where a unit would have to be written off, at that writeoff could then jeopardize the financial integrity of the company that they are invested in.

And with that in mind I think the capacity of the insurance industry should not be the limiting factor here. This issue of insurance needs to be looked at in more logical and durable fashion.

Senator HEINZ. Let me return to Mr. Schmalz a minute regarding the ability or the inability of the private sector to have insurance. You are now trying to come up with a billion dollar package, yet 2½ years ago when TMI occurred, the insurance was $300 million. What is the insurance as of today that is available?

Mr. SCHMALZ. We have $375 million available from the nuclear pools. We expect that to be increased to $450 million the first of the year. Nuclear Mutual Ltd., I believe, according to Mr. Nexon's testimony, has $450 million available. This is a combination of guaranteed cost or prefunded you might say, on the retrospective coverage.

Senator HEINZ. ,What would you say to someone as of today you have 375 that you can get, 2½ years ago it was 300. In the intervening 2 years, 2½ years, we've known that Three Mile Island is very very costly. It's never been estimated in less than $400 million. What would you say to people that might simply say that the movement from 300 to 375 represents a simply inadequate movement. Albeit you have some plans for the future, and as of today it's not accurate. How would you respond?

Mr. SCHMALZ. It takes time to do any of these things. And I think we indicated in our statement and I think the facts bear out, it wasn't until as recent as March of this year that there seemed to be a consensus that a billion dollars of property insurance coverage was desired by utilities, utility owners. It was following that that both Nuclear Mutual Ltd. and Edison Electric Institute and the pools began to gear up to finding that billion dollars. I think under the circumstances where there was no clear demand until the focus really that has been put upon the matter by these hearings and some of the earliers, but there was no clear demand for it. You can't get a supply where there isn't any demand.

Now that the demand is clear the message is out that people want it, they need it, the market will respond.

Senator HEINZ. Let me turn to Mr. Kron. You have discussed GPU's viability and I have a question or two I'd like to ask you. You made a suggestion in lieu of some of the proposals such as S. 1606 on insurance, you prefer to see the Federal Government simply shell out the money and then worry about getting it back later. Where are we supposed to get the money?

Mr. KRON. There may have been some misunderstanding as to what I was saying.

Senator HEINZ. You want me to read your testimony?

Mr. KRON. What we are really saying, it addresses the issues we've been talking about in this question and answer period here, that for us to have a nuclear option in my opinion in the United States, it's going to take enormous amounts of capital, and if you take a look at the investor position relative to a decision to invest in nuclear generation, it would appear to me that the investor takes all the risk and gets none of the benefit. The primary benefit of a nuclear generation plant is lower cost to generation which is passed on to the ratepayer, but as we see in the GPU example, if there is a problem the shareholder is the one that has its dividends cut, and the market value et cetera.

Given this kind of a scenario I think what you have to do is take the risk out of the nuclear investment. And what we are suggesting is that $1 billion of insurance in our opinion, given the cost of nuclear generation coming in the 1980's and even the GPU Three Mile Island experience, is insufficient.

If you take a look at the cost of cleanup issue, which we all acknowledge to be in the $1 billion level, we have not fully addressed the cost of either restoration or mothballing which is normally covered by property insurance, which is just in round numbers it might be $300 million, but that is not a firm number. If you say use that $300 million for mothballing so that TMI-2 is never used again is another consideration as to what happens to the $700 million that GPU has invested in TMI-2, and so if you use those three numbers, the $1 billion for the cleanup, the $300 for the mothballing, and the $700 recovery of a fixed investment, you really have a Three Mile Island No. 2 accident that is a $2 billion accident in today's dollars. And I guess on that basis I say the $1 billion is in our opinion not sufficient.

If you compare the $1 billion to the fact there are several sites under construction now that exceed $3 billion, Seabrook in New Hampshire, Limerick in Pennsylvania is estimated to be in excess of $4 billion now, Nine Mile Point in New York State is anywhere from $3½ to $5 billion.

Again, we conclude that $1 billion is insufficient relative to those property costs. What we are suggesting here is that the private sector provide as much insurance as they can come up with and that will be appropriate. We are saying then that there needs to be a safety net for the benefit of the investor. Otherwise there is no incentive for him to invest in nuclear generation, and that that should be a federally supported net. I guess our theory is that the Government makes the funds available and then recoups on some sort of a user charge against all kilowatt hours sold across the Nation.

So we're not suggesting that the Government lay out taxpayer dollars, but basically act as a banker as you were, to bridge the liquidity needs of a given accident until you can recoup those funds from the people that benefit from nuclear energy which I think is all of us in this Nation.

Senator HEINZ. Why isn't that just a straight bailout with efforts to recover the cost later?

Mr. KRON. I don't think it's a bailout.

Senator HEINZ. What I hear you proposing, just so we understand it, private people do as much as they can and above that Federal Government would pay whatever it costs to clean up, possibly even to restore. Now in the case of Three Mile Island as you've explained it, that's a $2 billion cost, so that would take the Federal Government in, if your proposal were in effect as I understand it, the Federal Government would shell out a billion dollars in addition to what would otherwise be contemplated here. And my question is, where do we get that money? We're only running on a $50-billion debt as it is.

Mr. GILLHAM. Mr. Chairman, I think the intent of what we are trying to say, when it comes to the insurance issue, is that my colleagues mentioned, we think clearly the industry suffers from a serious under-insurance problem. We question whether the private insurance industry today is sufficient to meet those needs. We have stated the testimony and we think S. 1606 does indeed address this issue. And all we're trying to posit, really, for consideration is there might be a way if it were deemed desirable, to simplify the approach of the Federal Government, the issue of insurance——

Senator HEINZ. Let's have the Government pay. That's always the simplest point.

Mr. GILLHAM. I think the intention was to have a retrospect charge on plant licensees to pay the Government back.

Senator HEINZ. Let me ask you a practical problem. If you say Government will pay above such and such an amount, doesn't that just tell the private people that they should never have to worry about going above such and such an amount? How would you deal with that problem?

Mr. KRON. As I understand the testimony from the insurance people is that the insurance industry has a strong incentive to provide as much insurance as they possibly can. So I think you have the free enterprise motivations here for the private sector to do as much as they can. All we're saying is the Three Mile Island situation we're dealing with a catastrophe, and I guess we question when you can put a limit on catastrophe in that there needs to be some sort of a safety net. We can discuss at length the mechanics of providing that. There needs to be some sort of a safety net to provide for this capacity which the investor in a public utility is not being paid. It's a risk that he's not being paid to underwrite.

If he's not being paid to underwrite that risk then money is not going to flow into that and we don't have a nuclear option as part of our total energy.

Senator HEINZ. What you've just described is an unlimited standby loan guarantee.

Mr. KRON. That's not the way I would conceive it.

Senator HEINZ. Isn't that really what it is?

Mr. KRON. I think the thing that we're missing——

Senator HEINZ. We'll pay the money, you owe it to us, we'll pay as much as you want, we guarantee payment. That's a loan guarantee.

Mr. KRON. What we're talking about is a mechanism——

Senator HEINZ. Isn't it a fact that's what it is, an unlimited standby loan guarantee.

Mr. KRON. Except that what we're missing here is the mechanism for recoupment which is a broad cost sharing by everybody that uses electricity in terms of a recoupment mechanism.

Senator HEINZ. Let me shift gears on you, and ask you about GPU's viability because we've gotten some testimony from you and others today and time is running a bit short on GPU. If we don't act, we the Congress, if we don't act to provide a mechanism for TMI cleanup in the future, what would be the opinion of the bank group you represent on the future viability of GPU? And what actions would your group be taking on the revolving credit arrangement?

I'm asking you to judge what the difference is between Congress doing something, somewhat unspecified, and Congress doing nothing which is a little easier to understand. If we do nothing, what would be your feeling about this future viability of GPU?

Mr. KRON. We support Governor Thornburgh's proposal. We think what he has come up with is equitable. We would also agree that that is a starting point and none of the respective shares are necessarily casting the stone.

Senator HEINZ. Is Congressional action needed on Governor Thornburgh's plan?

Mr. KRON. At this point I would say I believe so. I think we've heard testimony today, Congressional action is probably required relative to the industry contribution which is the most tangible piece of the program today, and that is far from the commitment, it's an expression of support.

Senator HEINZ. The $64 question on the industry contribution is not whether there is so-called facilitating legislation or whether we should make a voluntary contribution, or such contribution is mandatory. That is the toughest question for this committee to answer. And the question I would pose to you and your banks, and I kind of hate to do it because I hate to give bankers this much feeling of influence and power. They've already got enough, especially when you talk to my constituents who think that your interest rates are a little high, is this. If we don't have a locked in arrangement and if we don't make what to date are aspects of Governor Thornburgh's voluntary plan mandatory, particularly on the private and public utilities that are a very substantial piece of the action, and maybe as well the State of New Jersey and Pennsylvania as well. What would be the attitude of the banking community that has the revolving line of credit?

Mr. GILLHAM. I might respond to that.

I think both Mr. Kron and I have lived with the situation as have many people in this room since virtually the day of the accident, and I think both our banks and the banks that are part of the revolving credit agreement have found it necessary to have our actions influenced in due part by the actions of other parties, notably regulatory bodies, political bodies and others. For that reason it is terribly hard for us to tell you that if Congress does not mandate Governor Thornburgh's plan that we can tell you exactly what our position will be because it's going to obviously depend upon such things as regulatory actions in Pennsylvania and New Jersey, what the Pennsylvania public utility does with respect to rate cases pending, with respect to the NRC's deliberations on the restart of unit 1. These are important elements, but I can assure you the critical one to us is without some framework established to provide for a cleanup of TMI-2, I personally don't see how the system is going to be able by early 1983 when it has $85 million to refinance those insuring obligations, and that I think means that to the degree that actions to establish the framework are not forthcoming in a relatively short timeframe, it's going to be difficult for me to see how we are going to get from here to there and handle the situation which we can feel comfortable about in about 2 years.

Senator HEINZ. If GPU doesn't succeed in refinancing in 1983, the $85 million mortgage, what are the consequences?

Mr. KRON. I think GPU, if it could not meet its obligations when due, would unavoidably have to seek protection under the Bankruptcy Act.

Senator HEINZ. We would experience something we haven't experienced.

Mr. KRON. That is correct, and that would put the industry as a whole into the posture that Mr. May suggested.

Senator HEINZ. Any further comments any of you would like to make?

Mr. SCHMALZ. I would like to make one. I think my colleague here on the left suggested that we had testified that there would be a ready private market which would expand. That testimony assumed that there would be Government loan guarantee above a fixed amount or would drop down to whatever somebody thought was appropriate.

Senator HEINZ. In a sense you would take a bit of issue with your friends?

Mr. SCHMALZ. The private market responds when it has room to respond.

Senator HEINZ. Thank you. Gentlemen, we appreciate your testimony. It's been very, very helpful and I thank you for your time. Would you please identify yourselves.

Mr. FADEN. I am Michael Faden. With me on your left is Keiki Kehoe, and on the right is Richard Kinane from the Environmental Action, who collaborated with me in the testimony.

We're also speaking today on behalf of three other environmental safety groups, the Air Club, Friends of the Earth, and the Natural Resources Defense Council. We have a long statement which I would respectfully request be put in the record.

Senator HEINZ. Without objection the entire statement will be placed in the record.

STATEMENT OF MICHAEL E. FADEN, LEGISLATIVE LIAISON, UNION OF CONCERNED SCIENTISTS, ACCOMPANIED BY KEIKI KEHOE, WASHINGTON REPRESENTATIVE, ENVIRONMENTAL POLICY CENTER; AND RICHARD J. KINANE, NUCLEAR ISSUES COORDINATOR, ENVIRONMENTAL ACTION

Mr. FADEN. I'd like to begin by complimenting you, Governor Thornburgh, Senators Heinz and Specter, and a number of Members of the House of Representatives led by Congressman Allen Ertel for the leadership they have demonstrated on this critical issue.

We agree with GAO that the State officials in Pennsylvania and New Jersey should take a leadership role in assembling the financial assistance in the cleanup. In that light we believe that Governor Thornburgh's cost-sharing proposal is a very promising approach that should be encouraged. However, we have specific reservations about several aspects of it. It is clearly the most practical alternative to date, partly because it does not rely on its implementation from Federal legislation.

Governor Thornburgh's plan appropriately in our view lists the entire industry in the TMI cleanup effort, which appropriately relies on substantial Federal contribution. We are not persuaded that the Federal Government should be anything more than a very junior partner in this enterprise for reasons we will explain shortly.

Let me analyze the Thornburgh plan in terms of the three major parts, GPU, the rest of the nuclear industry, and the Federal Government. GPU as you can see from its annual report it had over $500 billion in assets and $1.8 billion in operating revenues in 1980. Besides its other nuclear unit it operates 10 coal-fired generating units. GPU's current cash flow problems we believe can be overcome by State regulatory actions, the rate increases granted earlier this year to all GPU subsidiaries by the Pennsylvania and New Jersey commissions showed that the State regulators will respond when action is necessary.

We do not recommend that all cleanup costs be passed directly through to the ratepayers. A number of alternatives remain open for GPU and the State commissions. GPU can be in serious negotiations with its creditors to reformulate or stretch out its debts because it is hardly in the creditor's interest that GPU continue to face grave financial difficulties. And parenthetically we expect those negotiations to happen between now and 1983 which is the date you heard mentioned when the next large installment of GPU debts come due.

Such negotiations will not happen, however if either GPU or the financial community receive a substantial direct or indirect Federal aid as a realistic possibility.

GPU should also explore several other options that are unable to bear more of the cleanup costs. For example, cost effective conservation programs could drastically reduce demand growth and thus eliminate the need for expensive capacity additions. As GAO pointed out the rate of low growth has more influence on power costs and system reliability than other more obvious factors such as fuel prices and construction delays.

GAO estimated, and this is an eye-opening estimate in our view, that a decrease in GPU's annual growth rate from 2.6 percent to 1.6 percent, would reduce the GPU systems revenue requirements by $469 million per year in 1981 dollars during the period from 1981 through 2009. Let me emphasize that is $469 million per year in lowered revenue requirements. That would be enough, if all of this were allocted to the cleanup, and we don't expect it to be, to finance the cleanup over a 2-year period.

Along similar lines a productivity improvement program for the coal-fired plants operated by GPU and other Pennsylvania members of PJ power pool could save from $45 to $56 million in 1982 alone for an investment of only $5 to $8 million. These are not our figures. They come from the Pennsylvania Public Utilities.

Finally, GPU's financial position will be substantially improved if and when it decides to declare TMI a total loss.

For reasons of its own GPU refuses to acknowledge the inevitable, that TMI-2 will never generate another kilowatt hour. But accepting this and moving to recover capital investment, GPU can increase the pool of resources available to it for various investment needs. And among these needs we believe that the cleanup must take precedence.

One source that we strongly believe GPU should not count on for assistance and funding the cleanup is the restart of TMI-1. As the letter we have attached to our testimony that UCS sent yesterday to Governor Thornburgh indicates, we do not believe that adequate safety assurances for TMI-1 can begin at this time. If and when Unit 1 does restart, we don't expect it to remain online very long. Many of the NRC's lessons learned requirements have not yet been implemented in Unit 1, and certain major retrofits are due to be performed by January and July of 1982.

If the commission allows the unit to be restarted on the condition that these deadlines are met, one or more shutdowns of at least 1 month each will be required. In addition a lengthy shutdown to deal with the reactor vessel is at least a possibility. TMI-1 is one of the eight plants for which the NRC has asked the licensees for much more detailed information on how to deal with this new safety issue.

In any case if Unit 1 is placed in the rate base, the ratepayers may be simultaneously paying for purchase power and the cost of Unit 1.

Let me now turn to the nuclear industry. If GPU ratepayers need help in financing the cleanup for TMI-2, we suggest they turn first to the rest of the industry. The EEI commitment of $32 million a year we believe is commendable but it does not go far enough. The benefits to utilities and legitimate safety research as well as the elimination of public relations nightmare, are easily worth more than $200,000 per reactor per year, and that is what the EEI commitment divides out to.

As was reported in the financial newsletter, "Industry sources say privately that if no Federal or ratepayer contribution to the cleanup cost can be applied the utilities are prepared to bankroll the cleanup themselves rather than leave it hanging indefinitely over the industry's head."

We believe that rather than GPU and other utilities testing Congress' willingness to hold out, the shoe should be on the other foot. It's time for the industry, including the manufacturers, architect engineers, and contractors to show the rest of us how much priority they collectively place on moving this threat to their own survival. EEI has suggested that Congress pass legislation assuring that utilities will be able to pass through to their ratepayers all of the contributions to the TMI cleanup. While we understand the utilities' anxiety, Congress isn't the right form to resolve it, since the utility will have difficulty arguing that stockholders will not benefit in some degree from any TMI contribution. The State public utility commission should continue to determine the fair share of consumers and each class of consumer must pay. Federal intervention here would set a dangerous precedent.

The fact that these private resources within and outside GPU have yet to be tapped demonstrates two things. First, that GPU is a long way from bankruptcy and second that Federal financial intervention would be extremely premature now. The actions of the state regulators and creditors in the nuclear industry clearly indicate that each of them will take the necessary steps to avoid GPU bankruptcy. In our view bankruptcy is a false issue.

By the way, just mentioned here to correct some misinformation you heard earlier, there have been elective utility bankruptcies in the past 50 years, the major one in the early 1940's was the bankruptcy of Associated Gas & Electric Co. And after the proceedings were all concluded that company was succeeded by another company, General Public Utilities.

Congress should also refrain from committing Federal resources to the Thornburgh plan. There is contemplated and the administration has recently reported $110 to $120 million that you heard about this morning. Although the Federal Government has a preeminent role in radiation health and safety protection, in our view it should not be responsible for all consequences of the commercial use of nuclear energy. The only justification for Federal expenditures to clean up Three Mile Island will be a simple necessity to protect public health and safety if all else fails. We don't believe that point has been reached yet.

Any contribution that Congress does approve should be taken from the nuclear budget rather than added to it since the present administration seems determined to continue research and development subsidies to the nuclear industry while setting off funding for safer and more cost effective energy alternatives. At least the TMI cleanup would be the most priority, and other priorities should be reduced in scope.

Let me now pay attention to the legislation before this committee. We do not believe that the current situation calls for the enlargement of the Federal role underwriting commercial and nuclear power that this bill proposes. For reasons set out in length in our testimony, we believe that this bill goes beyond what is needed and creates a mechanism that will have effects counterproductive to its intentions. We believe that the insurance fund set up in S. 1606 is not really insurance in any normal sense of the word. First there is no effective ceiling on the coverage. Second, the deductible $50 million is minimal in comparison with the risks involved. Third, no provision for copayment is included. And fourth the level of premiums and the degree of risks are loosely linked.

We would also point out that because the bill requires membership in the Federal insurance pool and payments of the premiums as a condition to each reactor operating license, paying the premiums would be a requirement of Federal law, and we believe that the utilities would then be legally entitled to pass those premiums through the ratepayers. The State utility commissions would very likely have no discretion to allocate any portion of the premium payments to shareholders. This direct passthrough of premium costs combined with the unlimited assessment of member utilities authorized to reimburse the full cost of any future accident in effect makes this mechanism not insurance, but rather an unlimited excise tax on nuclear utility ratepayers.

We believe that it does not, well, it passes the costs on directly to consumers across the country, making them effectively the insurers and underwriters of the nuclear industry.

The most serious drawback to S. 1606, however, is its probably effect on future operation of nuclear powerplants insuring the payment of all the utilities from the major accidents or relieving the plant's owner of all but a small fraction of those costs.

We have already heard a great deal which we won't repeat about the insurance market and its ability to meet the needs of the nuclear utilities. We believe that NRC should pay close attention to see that nuclear utilities are not manifestly underinsured, and should in its current rulemaking require that each utility demonstrate its access to a certain amount of funds sufficient to clean up after a serious accident.

The latter requirement will encourage the utilities to augment the property damage coverage now offered by the existing insurance pools. Beyond that kind of minimal NRC regulation which goes beyond the rule that they did propose, we believe that no Federal agency is equipped to determine for each utility the proper balance between outside coverage. The State utility commission and the utilities themselves should continue to set that balance. And if the private market is not able to offer property damage coverage in amounts that fully cover the potential cost of an accident, then perhaps that is the marketplace signal to all the rest of us that the nuclear industry has gone beyond its maximum prudent level of risk. In that case Congress should not repeat the mistake of the Price-Anderson Act and step into it.

Let me just parenthetically depart from my testimony here and mention the fact, an observation which I hadn't heard in a day of sitting here. I believe every person who testified so far assumed that at least there is a substantial likelihood of more catastrophic accidents. I think that assumption which is clearly the working assumption of everybody dealing with this issue speaks of the safety of nuclear power.

Let me sum up by pointing out that any extension of the Federal Government's intervention in the financing of commercial nuclear power is particularly difficult to justify the time and thrust of nuclear energy policy. At least with respect to conservation, solar energy and fossil fuels, is to minimize an active Federal role and let the marketplace work its will. Those including some on the last panel who believe that a Federal agency such as DOE should be delegated the power to tax utility customers in order to guarantee the nuclear solvency, and especially having the burden of proof, we hope Congress will not pursue any legislative solution while Governor Thornburgh's cost-sharing plan or any successive proposal remains viable. As long as Congress clearly communicates its unwillingness to bail out GPU directly or indirectly and keeps Federal involvement in any cost-sharing plan at a minimum, the responsible State officials and the private sector will, we believe, take the actions necessary to produce an acceptable position from the cash flow.

Senator, thank you, and I would answer any questions you may have.

[The prepared statement of Mr. Faden follows:]

Union of
CONCERNED
SCIENTISTS

UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
and
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON NUCLEAR REGULATION

TESTIMONY OF MICHAEL E. FADEN
on behalf of
ENVIRONMENTAL ACTION
ENVIRONMENTAL POLICY CENTER
FRIENDS OF THE EARTH
NATURAL RESOURCES DEFENSE COUNCIL
SIERRA CLUB
UNION OF CONCERNED SCIENTISTS

On S. 1606 and the cleanup of Three Mile Island Unit 2

October 20, 1981

Thank you for the opportunity to present our views on the financing of the cleanup at Three Mile Island Unit 2. My name is Michael Faden, and I am legislative counsel for the Union of Concerned Scientists. In addition to UCS, several other national environmental and safe energy organizations -- the Sierra Club, Natural Resources Defense Council, Friends of the Earth, Environmental Action, and the Environmental Policy Center -- wish to be recorded as subscribing to this testimony.

We would like to begin by complimenting Governor Thornburgh, Senators Heinz and Specter, and a number of members of the House of Representatives led by Congressman Allen Ertel for the leadership they have demonstrated on this critical issue. While as Pennsylvanians they are acutely sensitive to the need to rid Three Mile Island of its radioactive dangers, we can assure them that millions of other citizens nationwide share their concern for the people who are still threatened by the effects of the TMI-2 accident. The efforts and contributions of these responsible officials have brought us much closer to a solution to the cleanup funding impasse than we were at the beginning of this Congressional session.

We all firmly believe that the decontamination of TMI-2 must go forward safely and carefully, without delay. The timing, pace and extent of the cleanup should be governed by safety considerations, rather than economic grounds. For roughly the past 18 months, General Public Utilities has followed a policy of slowing down the onsite cleanup work in order to conserve the last of the $300 million in insurance proceeds. That policy is unwise from the standpoint of public safety and unfair to the surrounding community. While the plant is not now releasing radioactive materials, it must be continuously monitored, primarily to ensure that its equipment and systems do not deteriorate to the point where there is a high

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risk of releasing a large amount of radioactive material to the environment.

Proceeding carefully, step by step, GPU and its contractors must do the analysis and testing necessary to determine exactly how to decontaminate the plant and dispose of the radioactive wastes. At an early point in that process, GPU must decide whether it intends to decommission or rehabilitate Unit 2. Contrary to the General Accounting Office's conclusion, we believe that a decision to decommission the unit could not help but radically change the methods used in the cleanup, significantly reducing the cost and time involved. In our view, given the damage to the unit caused by the accident, a decision to rehabilitate and restart the unit would be difficult to justify on both economic and safety grounds; but the only point we wish to make here is that GPU must decide the issue one way or the other within approximately the next year.

The Nuclear Regulatory Commission must fulfill its mandate to protect the public health and safety by requiring GPU to do more than "babysit" the plant. NRC is obligated, by the terms of the Atomic Energy Act, to take those actions that are necessary to "protect the health and safety of the public." Its licensees are, in turn, obligated to operate their facilities in accordance with law. It is, in the first instance, NRC's responsibility to see that its rules are enforced. Only if it appears clear that GPU is wholly incapable of performing its obligations under federal law should the NRC and Congress consider extraordinary remedies, legislative or otherwise. That point has not yet been reached, and we believe it need not be reached.

We agree with GAO that "state officials in Pennsylvania and New Jersey should take the leadership role in assembling the financial assistance needed for the cleanup." Governor Thornburgh's July 9 cost-sharing proposal is a promising approach that should be encouraged. It has broken the impasse that prevailed earlier this year, when each potential party was waiting for the other parties to move first. Although we have specific reservations about several aspects of the Thornburgh plan, it clearly is the most practical alternative presented to date, in part because it does not rely for its implementation on federal legislation. Governor Thornburgh's plan appropriately, in our view, enlists the entire nuclear industry in the TMI cleanup effort. Less appropriately, it relies on a substantial federal contribution. We are not persuaded that the federal government should be anything more than a very junior partner in this enterprise, for reasons that we will explain below. Let me analyze the Thornburgh plan party by party, starting with GPU. (The state and insurance shares deserve little mention, because the former are simply transfers of excess funds collected from ratepayers, and the latter is not a new funding source.)

GPU

GPU is not a poor company. It had over $5 billion in assets and $1.8 billion in operating revenues in 1980. Besides its other nuclear unit (Oyster Creek), it operates 10 coal-fired generating units. GPU's current cash flow problems stem from two sources: the added expenses of replacement power, particularly the interest on funds borrowed to pay for that power during the first year after the accident, and the state utility commissions' exclusion of both TMI units from the rate base. These cash flow problems can be overcome by state regulatory actions. The rate increases granted earlier this year to all three GPU subsidiaries by the Pennsylvania and New Jersey Commissions show that the state regulators will respond when their action is necessary.

We do not recommend that all cleanup costs be passed directly through to the ratepayers. A number of alternatives remain open to GPU and the state commissions. GPU can begin serious negotiations with its creditors to reformulate or stretch out its debts, because it is hardly in the creditors' interest that GPU continue to face grave financial difficulties. The extension last April of an additional $19 million of credit under the Revolving Credit Agreement reflects, in our view, the creditors' understanding that their highest priority is maintaining GPU's solvency. Such negotiations will not happen, however, if either GPU or the financial community perceive that substantial direct or indirect federal aid is a realistic possibility. We do not believe that GPU's ratepayers--or those of other utilities--should bear the full cost of the TMI accident while its creditors continue to be largely insulated from the financial fallout.

GPU should also explore several other options that would enable it to bear more of the cleanup costs. For example, a cost-effective conservation program could drastically reduce demand growth, and thus eliminate the need for expensive capacity additions. As GAO pointed out in its most recent report: "the rate of load growth has more influence on power costs and system reliability than other more obvious factors such as fuel prices and construction delays...As demand increases, more costly sources of energy must be tapped, whether they are the utilities' own less efficient generation or higher-cost purchases from other utilities. A decrease in demand from the present forecasted levels permits the load to be met with more efficient, less expensive GPU generation or outside purchases." [EMD-81-106, p. 6, 11] GAO estimated that a decrease in GPU's annual load growth rate from 2.6% to 1.6% would reduce the System's revenue requirements by $469 million per year (in 1981 dollars) during the period from 1981 through 2009. Many energy conservation experts could suggest a program of short-lead-time, fast-payback investments that would almost immediately begin to benefit GPU and its ratepayers. Perhaps more importantly, the aggressive implementation of such a program would also demonstrate GPU's management capabilities and enhance its respect in the investment community.

Along similar lines, a productivity improvement program for the coal-fired plants operated by GPU and the other Pennsylvania members of the PJM power pool could save $35-56 million in 1982 alone for an investment of only $5-8 million, according to a Staff Report of the Pennsylvania Public Utility Commission. Since the other PJM utilities have furnished much of GPU's purchased power, a substantial portion of the non-GPU savings would directly benefit GPU.

Finally, GPU's financial position will be substantially improved if and when it decides to declare TMI-2 a total loss. Much of the company's current plight stems from the fact that almost $1.5 billion of its capital investment (TMI-1, TMI-2, and Forked River) is in regulatory limbo: it is neither in the rate base, earning a return, nor is it treated as a loss, to be claimed against tax liabilities and amortized through rates. Ratemaking treatment of TMI-1 is clearly dependent upon the result of the NRC restart hearings, and the company is already attempting to recover its losses associated with the abandoned Forked River plant. In fact, earlier this year the New Jersey Board of Public Utilities allowed Jersey Central to recover $31.7 million a year for the next fifteen years, which covers the entire abandonment loss for Forked River. But for reasons of its own, GPU refuses to acknowledge the inevitable: that TMI-2 will never generate another kilowatt hour. By accepting this, and by moving to recover its capital investment in TMI-2, GPU could increase the pool of resources available to it for various investment needs--its "bare-bones" construction program, its already proposed conservation/load management program, and the cleanup of TMI-2. Among these choices, we believe that the cleanup of TMI-2 must take precedence.

One source that we strongly believe GPU should not count on for assistance in funding the TMI-2 cleanup is the restart of TMI-1. As the attached letter from UCS to Governor Thornburgh indicates, we do not believe that "adequate safety assurances" can be given at this time, for the reasons set out therein. Pennsylvania's leading newspaper, the Philadelphia Inquirer, in an editorial written less than a month ago about two pending motions to reopen portions of the restart hearing, urged the NRC to take a cautious approach: "Like the operator competence issue, the matter of adequate safety equipment is fundamental to the start-up of Unit 1. As long as legitimate questions remain in either area, the reactor must not be permitted to resume operations."

If and when Unit 1 does restart, we do not expect it to remain on line very long. Many of the NRC's "lessons learned" requirements have not yet been implemented at Unit 1, and certain major retrofits are due to be performed by January and July 1982. If the Commission allows the Unit to be restarted on the condition that those deadlines are met, one or more shutdowns of at least one month will be required. In addition, a lengthy shutdown to deal with the advanced embrittlement of the reactor vessel is at least a possibility. In either case, if Unit 1 is meanwhile returned to the rate base, GPU's ratepayers may be simultaneously paying for purchased power and the carrying costs of Unit 1.

The Nuclear Industry

If GPU and its ratepayers need help in financing the cleanup of TMI-2, they should turn first to the nuclear industry. The Edison Electric Institute's commitment, in response to Governor Thornburgh's proposal, of $32 million a year from its member utilities is commendable, but it does not go far enough. If any party (other than the people of central Pennsylvania) has a vital interest in the cleanup, it is those who hope to earn a profit from the sale and use of nuclear reactors. The benefits to the utilities --in legitimate safety research as well as the elimination of a public relations nightmare-- are easily worth more than $200,000 per reactor per year. As Barrons reported two months ago: "Industry sources say privately that if no federal or ratepayer contribution to the clean-up costs can be pried loose, the utilities are in fact prepared to bankroll the clean-up themselves rather than leave it hanging indefinitely over the industry's head." We believe that, rather than GPU and the other utilities testing Congress' willingness to hold out, the shoe should be on the other foot. It is time for the industry --including the NSSS manufacturers, architect/engineers and contractors-- to show the rest of us how much priority they collectively place on removing this threat to their survival.

(We do not place much stock in another argument for outside assistance to GPU: the contention that assuring the financing of the cleanup will measurably reduce the risk premium that utilities now face in long-term debt or equity financing. We question whether more than a minimal part of the utilities' risk premium is fairly attributable to TMI, rather than the many other financial stresses afflicting electric utilities since the mid-'70's. These stresses include inflation, sharply decreasing growth in demand, soaring construction costs, and deep investor skepticism. In addition, even if TMI were magically cleaned up tomorrow, nuclear utilities would still pay a substantial risk premium based on the events that have already occurred: the accident itself that supposedly could not happen, the state utility commissions' unprecedented removal of both TMI units from the rate base, and GPU's brush with bankruptcy. All of these events are now irrevocably imbedded in investors' collective consciousness as part of the risks of nuclear power. An assured program for financing the TMI cleanup may reduce the nuclear risk premium, but cannot eliminate it. However, if one accepts the risk premium argument, a decrease of only 1/3 of 1% in interest rates would pay back, in one year, the entire $32 million annual contribution of EEI's members (assuming that electric utilities raise $10 billion in long-term financing each year). And in any case, if the risk premium argument justifies any outside assistance to GPU, it certainly cannot justify public assistance. If the industry will not help itself, why should the taxpayers step in?)

EEI has suggested that Congress pass legislation assuring, directly or indirectly, that utilities will be able to pass through to their ratepayers all of their contributions to the TMI cleanup. While we understand the utilities' anxiety, Congress is not the right forum in which to resolve it. Since a utility will have difficulty arguing that its stockholders will not benefit in some degree from any TMI contribution, the state public utility commissions should continue to determine the fair share that consumers, and each class of consumer, must pay. Federal intervention here would set a dangerous precedent.

The Federal Role

The fact that these private resources within and outside GPU have yet to be tapped demonstrates, first, that GPU is a long way from bankruptcy, and second, that federal financial intervention would be extremely premature at this point. Although GPU and others continue to assert that default and bankruptcy are realistic possibilities, we believe that recent history demonstrates otherwise. As GPU's chairman told the House Energy Conservation and Power subcommittee earlier this year, GPU does not face the same basic financial problems as, for example, the Chrysler Corporation. Its product is salable; it was not financially insecure before the accident. GPU's present situation is a severe but temporary cash flow shortfall. The actions of the state regulators, GPU's creditors and the nuclear industry clearly indicate that each of these parties will take the necessary steps to avoid a GPU bankruptcy. Thus, in our view, bankruptcy is a false issue, introduced to stampede Congress into hasty action.

(Although one often hears that no electric utility in this country has ever gone bankrupt, the fact is that GPU itself originated from the bankruptcy of a corporate predecessor, Associated Gas and Electric Company (Ageco) in the early 1940's. [For some background on the amazing history of Ageco and its many corporate cousins, see Business Week, December 8, 1945, pp. 68-72, and Fortune, December 1945, pp. 165 ff.] Fortune warmly described the ultimate outcome of the Ageco bankruptcy, the creation of a new holding company, GPU: "Thoroughly scrubbed, steamed, and massaged, Associated emerges from bankruptcy healthier than ever before--the pride of the SEC, the joy of Wall Street, and the hope of the creditors who have taken it over lock, stock, and bus bar.")

Congress is not the proper body to decide issues of cost allocation between GPU's customers, shareholders, investors and creditors. That role, to the extent that any non-judicial body handles such questions, has historically and properly been assumed by the state utility commissions. They are most familiar with the financial background of and the current and future demands on the local utilities, and they are closest to the individuals and businesses that will be most directly affected by any economic decision. We hope Congress will respect and maintain this historical division of jurisdictions, not only because it has worked well to date but also because the current situation does not require any expansion of the federal role in local utility financial decisions.

Congress should also refrain from committing federal resources to the Thornburgh plan, at least beyond those contemplated in the Administration's recently reported commitment of $110-120 million for research and development purposes. Since the nuclear industry is taxed relatively lightly in the Thornburgh plan, it should be asked to contribute more before the taxpayers are called on to fill the gap. Although the federal government has a preeminent role in radiation health and safety protection, it should not be inherently responsible for all consequences of the commercial use of nuclear energy. As Representative Morris Udall said earlier this year: "TMI was not an act of God such as an earthquake that was more severe than reasonable people expected; the accident resulted from deep rooted failure by all involved and in this instance, most particularly by General Public Utilities and its subsidiaries to appreciate the vulnerability of large power reactors in the face of relatively minor malfunctions." The only justification for federal expenditures to clean up Three Mile Island would be the simple necessity to protect the public health and safety if all other parties fail. That point has not been reached yet.

Any federal contribution that Congress does approve should be taken from the current nuclear energy budget, rather than added to it. Since the present administration appears determined to continue massive research and development subsidies to the nuclear industry while shutting off funding for safer and more cost-effective energy alternatives, at least the TMI-2 cleanup should have first priority and other projects of less immediate import should be deferred or reduced in scope.

S 1606

Let me turn now to the legislation before your Committees. The current TMI situation certainly does not call for the enlargement of the federal role in underwriting commercial nuclear power that S 1606 proposes.

S 1606 is really two bills in one, put together to finance the TMI cleanup from external sources in a way that purports to transcend purely local interests. While it taxes consumers across the country to pay most of GPU's cleanup costs, S 1606 also goes beyond the TMI situation to bail out any other utility that may have an expensive nuclear accident. Let us explain the details of how S 1606 does this.

The retrospective portions of the bill --subsections (b) and (c) of Section 6-- authorize a combination loan and grant that together cover 75% of the uninsured costs of the TMI-2 cleanup. The grant --half of that 75%-- would be paid directly by the Nuclear Property Insurance Fund set up in the Department of Energy, and indirectly by the ratepayers of all other nuclear utilities across the country. The loan for the other half of the 75% would also come from the Fund, most likely under concessionary terms; the interest rate, if any, and the repayment period are both completely in the Secretary's discretion. Since S 1606 sets no ceiling on the amount of GPU's cleanup costs that the Fund will reimburse, and since it includes only the loosest of obligations to repay any portion of the reimbursement, this legislation actually authorizes an unlimited transfer of other ratepayers' funds to GPU, with much less control by Congress than any federal appropriation.

While we are troubled by other aspects of the retrospective portions of S 1606, our problems with it are secondary to our reservations about the prospective parts of the bill. We refer to the so-called Insurance Fund that S 1606 establishes.

That Fund is not really insurance in any normal sense of the word. First, the bill sets no effective ceiling on coverage. The $2 billion maximum payment ostensibly set in subsection 4 (a)(2)(B) may be waived at any time by the Commission pursuant to subsection 4(a)(2)(B)(ii). There is no guarantee that the Commission will establish a maximum payment lower than the amount that an accident would be expected to cost, nor any provision that prevents the Commission from raising the maximum payment after an accident to cover the full costs of that accident. The result of this open-ended provision is an equally open-ended obligation on the part of the premium-payers. By contrast, any private insurance policy, particularly one underwritten on a mutual basis, would set very specific coverage limits.

Second, the "insurance" plan establishes a deductible ($50 million over the level of insurance available from private sources) that is minimal in comparison to the risks involved.

Third, no provision for copayment is included. Once the insured utility has exhausted its private coverage and spent the additional $50 million, the federal pool assumes all remaining on-site property damage costs. The utility's management and shareholders are held virtually harmless. By eliminating any risk-sharing above the $50 million deductible, the plan removes any incentive for the insured utility to mitigate its damages.

Fourth, the level of premiums and the degree of risk are only loosely linked. Although S 1606 directs the Secretary in setting premiums to take into account "the accident experience record of the licensee, the training and qualifications of the personnel employed or utilized by the licensee, and such other factors as the Secretary considers appropriate," we strongly doubt that the premiums will be set at levels that will effectively distinguish the safest licensees from the worst. The range of premiums under the current private property damage coverage is 2:1 per plant. In other words, the utility paying the highest premium pays approximately twice as much per plant as the utility paying the lowest premium. More importantly, the average premium (based on the $150 million total annual assessment required in section 5(a)(2)(B)) is $2 million per reactor. Assuming that this $2 million would be tripled rather than doubled for the most risky reactor, the resulting $6 million is dwarfed by the expenditures necessary for safety-related repairs to plant equipment. For example, the cost of repairing or replacing a faulty steam generator can easily exceed $100 million. Although $2-6 million is a substantial amount of money for most organizations, it is not enough, compared to the likely cost of a major accident or even the cost of the hardware retrofits required to avoid such an accident, to reflect the risks that the insurance pool would assume.

S 1606 requires membership in the federal insurance pool and payment of its premiums as a condition of each reactor operating license. Because paying the premiums would be a requirement of federal law, the public utility commission in each state served by a utility owning a share of a nuclear powerplant would have to pass those premiums through to the ratepayers. The state commissions would very likely have no discretion to allocate any portion of the premium payments to shareholders. This direct pass-through of premium costs, combined with the unlimited assessment of member utilities authorized in subsection 5(c) to reimburse the full cost of any future accident, makes it clear that this mechanism is not insurance as we know it. In reality, S 1606 authorizes an unlimited excise tax on nuclear utility ratepayers. It does not internalize the costs of TMI and future accidents within the nuclear industry, as some of its proponents have claimed. Instead, it passes those costs on to consumers across the country, making them the insurers and underwriters of the nuclear industry.

The inequity of always requiring consumers --especially those of another utility-- to pay for management's mistakes is reason enough to oppose S 1606. The bill also creates another inequity by effectively subordinating the public's damages from a major nuclear accident to the utility's. S 1606 provides unlimited insurance coverage (after the initial $50 million deductible) of all of the utility's onsite damages not covered by private insurance. In contrast, the compensation for offsite damages --those incurred by members of the public-- is strictly limited. Under the Price-Anderson Act, victims of a serious nuclear accident must divide up an unrealistically low pool of $560 million. Utilities are already in a favorable position because they retain the right to sue any other party who may have contributed to the accident, as well as buying their own property insurance--both rights denied to members of the public. Now S 1606 requires the ratepayers, who have no genuine recourse themselves, to help cover the utility's losses while their own go unpaid.

The most serious aspect of S 1606, however, is its probable effect on the future operation of nuclear powerplants. By ensuring the payment of the utility's damages from a major accident, while relieving the plant's owner of all but a small fraction of those costs, S 1606 institutionalizes a financial disincentive to safe operation and accident avoidance. Unfortunately, the predictable result of insulating the reactor's managers from the financial consequences of their actions can only be to reduce the already-insufficient external pressures to achieve the highest possible levels of safety. We believe that any federal legislation affecting nuclear powerplants should strengthen the incentives for safety. In that respect, this bill goes in precisely the wrong direction.

The Private Insurance Market

As we have already outlined, this legislation is not necessary to finance the cleanup of TMI-2; many other options remain available for GPU. Neither is S 1606 necessary to insure against future nuclear accidents. The private sector can and should handle that job.

The TMI-2 accident revealed three gaps in the insurance coverage available to nuclear licensees. Since that time, the utilities and the private insurers have filled two of those gaps, and they are moving to fill the third in their own self-interest without any federal regulatory compulsion.

The American Power Insurance Corporation, a private company formed by the American Public Power Association, offers continuing expense coverage to public and private utilities alike. Continuing expense coverage pays the costs of maintaining the powerplant as well as the principal and interest on the debt attributable to the powerplant.

The continuing expense coverage dovetails well with another program also initiated after the TMI accident: the replacement power insurance offered by Nuclear Electric Insurance Limited (NEIL), a mutual insurance company set up by the private electric utilities. Together these innovations demonstrate the private sector's ability to meet the insurance needs that became evident after TMI.

The same kind of gap-bridging is now under way with respect to on-site property damage coverage. American Nuclear Insurers (ANI), a private insurance pool that covers nuclear property damages, is expanding its capacity to $1 billion, and NEIL is also planning to offer excess coverage which would reach that level. In fact, according to recent reports in the trade press, NEIL and the commercial insurers are competing hotly for the nuclear utilities' excess coverage business. We see no need for the federal government to become an insurance provider for nuclear utilities when sufficient private interest and capacity are available. However, the passage of S 1606 would effectively remove any incentive for the private and mutual insurance carriers to raise their current levels of coverage.

The NRC should pay close attention to see that nuclear utilities are not manifestly underinsured, should enforce the licensees' legal obligation (regardless of the amount of insurance they may obtain) to decontaminate fully any facility that suffers an accident, and should in their pending rulemaking require that each utility demonstrate its access to a certain amount of funds that is sufficient to clean up after a serious accident. The latter requirement will encourage the utilities to augment the property damage coverage offered by the existing insurance pools. Beyond that kind of minimal NRC regulation (which goes beyond the rule that the NRC proposed for comment), no federal agency is equipped to determine for each utility the proper balance between self-insurance and outside coverage. The state utility commissions and the utilities themselves should continue to set that balance. And if the private market is not able to offer property damage coverage in amounts that fully cover the potential cost of an accident, then perhaps that is the marketplace's signal that the nuclear industry has gone beyond its maximum prudent level of risk. In this case, Congress should not repeat the mistake of Price-Anderson and step in where the private sector refuses to tread.

Federal Policy: Consistent or Contradictory?

Any extension of the federal government's intervention in the financing of commercial nuclear power is particularly difficult to justify at a time when the thrust of national energy policy --at least with respect to conservation, solar energy and fossil fuels-- is to minimize an active federal role and let the marketplace work its will. Those who believe that the Department of Energy should be delegated the power to tax utility customers, in order to guarantee the nuclear industry's solvency, now have an especially heavy burden of proof. Although at first glance S 1606 may seem to avoid these objections because it ostensibly does not involve a federal subsidy for GPU or the nuclear industry, that appearance is deceptive. A bailout that uses ratepayers' dollars instead of taxpayers' is still a bailout.

We hope Congress will not pursue S 1606 or any other legislative solution while Governor Thornburgh's cost-sharing plan, or any successor proposal, remains viable. As long as Congress clearly communicates its unwillingness to bail out GPU directly or indirectly, and keeps federal involvement in any cost-sharing plan at a minimum, the responsible state officials and the private sector will take the actions necessary to produce an acceptable solution to GPU's cash flow shortfall. From Congress' standpoint, no action is still the wisest action of all.

Union of
Concerned
Scientists

October 19, 1981

Honorable Richard Thornburgh
Governor
Commonwealth of Pennsylvania
Harrisburg, PA 17120

Dear Governor Thornburgh:

In a statement you issued on July 9, 1981, you indicated a willingness to support the restart of the Three Mile Island Unit 1 nuclear plant as a possible means of partially financing the cleanup of the damaged Unit 2. In your statement, you made your support for Unit 1 restart "contingent upon adequate safety assurances."

UCS has serious reservations about the safety of restarting TMI-1 as proposed by the GPU Nuclear Corporation and the Nuclear Regulatory Commission Staff. These reservations stem from UCS's participation in the NRC hearings on restart of Unit 1, as well as our continuing review of the implementation of the "lessons learned" from the TMI-2 accident. Our concerns may be broadly expressed as follows:

1) After identifying many of the safety issues raised by the TMI-2 accident, NRC has largely focused its attention and resources on quick, cheap fixes. These fixes have generally ignored the more serious problems revealed by the accident.

2) As a result of restrictions in the scope of the TMI-1 restart proceeding before NRC's Atomic Safety and Licensing Board, important questions about the safety of restarting TMI-1 were not considered in the NRC hearings..

3) GPU's position -- that TMI-1 should be allowed to restart unless it poses unique safety problems -- reduces NRC's standard of safety to the lowest common denominator.

4) NRC has repeatedly extended its own deadlines for implementing the TMI-2 "lessons learned" requirements at TMI-1 and other nuclear powerplants after continued pressure from the nuclear industry.

5) Commitments made by the NRC Staff and GPU Nuclear during the hearing process have since been retracted or

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substantially modified. Some of these commitments involve hardware improvements or plant staffing level upgradings which are directly related to the causes of the TMI-2 accident.

1) NRC's Emphasis on Quick Fixes

UCS has drawn from its participation in the TMI-1 restart hearings a firm conviction that "adequate safety assurances" have not been provided by either the NRC Staff or GPU Nuclear. If TMI-1 is restarted as presently proposed, it will be without adequate assurance that another accident more severe than the TMI-2 accident cannot occur at TMI-1. Many factors contribute to this conclusion, but they can perhaps be summarized by the general observation that the initial impetus for serious reform in the immediate aftermath of the TMI-2 accident has been supplanted by a retreat to "business as usual."

While "business as usual" might arguably be an appropriate posture if the NRC and the nuclear industry had learned and applied the lessons from the TMI-2 accident, the unfortunate fact is that in many important respects they have not. Nuclear industry spokespersons frequently claim that all of the significant safety problems associated with the TMI-2 accident have been solved. This is patently untrue. Although the NRC's so-called "Action Plan" does a relatively good job of identifying these safety problems, NRC's progress toward resolving them has been glacial at best.

In determining the priority assigned to implementing Action Plan items, the NRC used a 210-point rating system. Only 100 points were based on safety significance. The majority of the points were assigned for such factors as cost (both to NRC and the industry), the time required to solve the problem, and whether the item involved hardware modifications or improvements in the man-machine interface. This approach has directed the NRC's attention to quick cheap fixes, rather than problems with high safety significance which involve more complex technical questions and require more time and expense to resolve. (A copy of the NRC's priority ranking system is enclosed for your reference.)

Today, two and one-half years after the TMI-2 accident, some of the most serious safety issues (identified by all independent investigations of the accident) have not even begun to be addressed in a meaningful way. In March 1981, NRC listed three new generic safety issues that stem directly from the TMI-2 accident. NRC does not plan to resolve these issues until April, 1984. Based on NRC's past record, we have good reason to expect that schedule to be extended by many years. NRC is continuing its practice of classifying safety problems as generic as a way to effectively postpone decisions on difficult technical questions. The hydrogen control and degraded core issues are two prime examples. While the NRC has spent literally thousands of man-hours finding ways to speed up the approval of new operating licenses, it is unwilling to adopt the same standards of expedition in setting deadlines to resolve these and many other important safety problems that plague currently operating reactors.

2) The Issues Ignored in the Restart Hearings

A decision authorizing restart of TMI-1 by the Atomic Safety and Licensing Board and the Commission itself would not constitute a full endorsement of the safety of that unit. We say this because the scope of the restart hearings was legally restricted in a way that allowed the Board to consider only the precise sequence of events that occurred at TMI-2 or very close analogs. In essence, the Commission quite deliberately refused to look at other safety issues not directly involved in the TMI-2 accident.

This contrasts sharply with the current requirements for a reactor to receive a construction permit, an operating license, or an upgrading from provisional to full-term license. In each case, NRC rules require the utility and the NRC Staff to demonstrate publicly that each of the so-called "generic unresolved safety problems" has been resolved on a plant-specific basis or that compensatory safety measures have been adopted. This review has never been done for TMI-1, because it was originally licensed before the generic unresolved safety problems were publicly disclosed.

In the TMI-1 restart hearings, the Commission's refusal to look at safety issues beyond those directly involved in the TMI-2 accident amounts, in UCS's view, to deciding that safety problems will only be dealt with after they have caused an accident, if then. While NRC may have the legal right to limit its proceedings in this way, such restrictions cannot be justified on technical or common sense grounds.

One issue conceded by all parties to be directly involved in the TMI-2 accident was effectively barred from the hearing. This is the issue of hydrogen gas control. During the TMI-2 accident, large amounts of explosive hydrogen gas were generated when the reactor core became heavily damaged and partially melted. The amount of hydrogen generated during the accident was 6 to 10 times larger than the maximum credible amount specified in NRC regulations. As a result, a hydrogen explosion occurred during the accident.

While that explosion did not breach the containment, no one yet knows whether the explosion damaged other equipment important to safety. Neither the NRC nor GPU Nuclear has even examined the safety equipment inside TMI-1--a much older plant than TMI-2--to determine whether a hydrogen explosion would compromise the safety of that plant. GPU's only response to the hydrogen control issue has been to install a hydrogen recombiner in TMI-1 that is incapable of coping with the amount of hydrogen actually generated during the TMI-2 accident.

UCS had sought a fuller inquiry into the hydrogen issue. However, before the restart hearing, the Commission (by a 2-2 vote) refused to waive its existing hydrogen control regulation. This pre-TMI-2 regulation bases the design of hydrogen control systems on the assumption that the maximum amount of hydrogen generated will be only 1/6 to 1/10th the amount that was actually generated during the accident. In a later decision, two NRC Commissioners bluntly explained the effect of the Commission's ruling:

> The Board [in this case] found [relying on the TMI-1 ruling] that, in view of new instructions to reactor operators and other improvements, an event which actually occurred two years ago was no longer 'credible', and that, therefore, there was no need to pursue possible remedial steps. It is a finding that could only have been made by a group schooled in the arcane subtleties of nuclear regulation. No ordinary person is capable of such foolishness. After the TMI experience, this review of the 'credibility' of an accident involving hydrogen has been a waste of the parties', the Board's, and the Commission's time. It can only contribute to public cynicism about nuclear regulation and the role of public hearings in the decisionmaking process. Duke Power Co. (William B. McGuire Nuclear Station, Units 1 and 2), Order (June 29, 1981), Separate Views of Commissioners Gilinsky and Bradford, slip opinion at 10.

We believe it is especially ironic to apply such tortured reasoning to TMI itself.

Another issue that was severely restricted in the restart proceedings is the question of whether the equipment needed to safely shut down the plant in an accident has been qualified to survive the accident environment. The NRC Staff's testimony was limited to the ability of the equipment to survive a small break loss-of-coolant accident of much smaller dimension than the TMI-2 accident on the remarkable grounds that an accident as severe as TMI-2 cannot happen again! Nor did the NRC ever review for the restart proceedings the ability of safety-related equipment to survive other types of serious accidents, such as main steam line and high-energy line breaks.

This is far from a theoretical problem. Because of these limitations on the scope of the hearings, UCS was prevented from presenting evidence to the Licensing Board that many safety-related components in TMI-1 have not been qualified to survive serious accidents. The NRC Staff and GPU Nuclear promised to address these questions by July 1982, but not in a way that allows open hearings or public participation. Nor is there any reason to expect the July 1982 date to be a firm one. A large number of utilities have already applied for a 13-month blanket extension, which the NRC Staff seems perfectly willing to grant. We have little doubt but that, after the public attention that accompanied the restart hearings is over, GPU will line up with the other utilities if it finds it inconvenient to adhere to the July 1982 "deadline."

3) The Lowest Common Denominator is not the Appropriate Standard of Safety

There are a large number of other issues that were covered during the restart hearings in which UCS believes that the company and the NRC have proposed to compromise safety in order to get TMI-1 back on line and to keep other reactors in operation. Because the Licensing Board has not yet issued a decision on design issues, we cannot say whether it will accept the company's and the NRC Staff's positions. It is therefore premature to discuss these issues in detail; however, if you or your staff would like to be briefed on them, we would be pleased to do so.

A few examples of these issues are: whether the relief valve (PORV) which caused the TMI-2 accident should be classified as a component important to safety and required to meet strict standards of design and construction; whether the method of supplying electric power to the pressurizer heaters jeopardizes the power source for all in-plant safety systems, thereby making TMI-1 more dangerous than it was before the TMI-2 accident; and whether the reactor operators must be provided with positive indication when valves in safety systems are not in their correct positions (the TMI-2 operators were unaware that two emergency feedwater valves were closed). In each case, GPU and the NRC Staff argued against the imposition of stricter requirements. (UCS recently moved to reopen the hearing on some of these design issues because the NRC Staff failed to disclose that some Staff members recommended that certain stricter safety measures advocated by UCS be adopted, contrary to the Staff's testimony during the hearing.)

UCS has been astonished at the attitude consistently exhibited by GPU Nuclear throughout the restart hearings. GPU has time and again responded to safety issues by taking the position that if any other plants are operating with similar problems, TMI-1 should likewise be permitted to operate. This reduces the standard of public protection to the lowest common denominator--a "standard" dictated by considerations of expediency and accidents of history. It substitutes for reasoned judgment the proposition that the worst shall set the pace for all. On the contrary, GPU Nuclear should, we believe, exhibit the strongest commitment to leadership in safety after its experience at TMI-2.

4) NRC's "Deadlines" are Infinitely Flexible

Another consistent, very troubling pattern emerged during the TMI-1 restart hearings: NRC's so-called "deadlines" for achieving compliance with TMI-2-related requirements are not true deadlines, but instead are infinitely flexible. Virtually all of the deadlines have already been extended. Many requirements originally had implementation deadlines of January 1980 or January 1981. In successive issuances, the NRC has postponed these deadlines to July 1981, and beyond in some cases. For example, the deadline to upgrade the emergency feedwater system to meet NRC's requirements for systems important to safety was originally January 1981, was extended to July 1981, and is being considered now for an additional delay.

The NRC Staff announced during the restart hearing that all deadlines occurring after June 30, 1981 are subject to reconsideration. These deadlines cannot in any sense be called firm. Thus we have no basis for believing that any promises of future action by specific dates will be kept. NRC's history clearly demonstrates that the convenience of the licensees will take precedence over strict enforcement of safety requirements, including those requirements that stem directly from the TMI-2 accident.

5) GPU's Commitments Have Been Withdrawn

Nor can GPU Nuclear's commitments be relied upon. For example, during the TMI-2 accident noncondensible gas and steam accumulated in the reactor coolant system, blocking the circulation of water needed to cool the core. Circulation of coolant was established only by the use of the reactor coolant pumps, which are not considered important to safety and therefore need not meet NRC's requirements to ensure the reliability of safety systems. In order to provide a reliable method of removing noncondensible gas and steam, GPU originally "committed" to installing new vents for this purpose at TMI-1 before it restarts. However, GPU has since abandoned this commitment. When TMI-1 restarts (assuming the Licensing Board so rules) it will be in essentially the same condition as TMI-2 was during the accident. The vents will not be installed until many months in the future.

In concluding, we must emphasize that the specific issues mentioned here are only a very few examples of the safety problems that remain unresolved at TMI-1. As you recognized when you asked UCS to provide an independent technical evaluation of the krypton venting, these questions are complex and become entangled with economic and political considerations. We advised you then that the venting would not pose a significant radiological health hazard to the public. This time our conclusion is the opposite: restart of TMI-1 in the condition proposed by GPU Nuclear and the NRC Staff would not provide adequate assurance of safety to the people who live around it.

NRC's decisions are strongly influenced by its regulatory history and its extreme reluctance to take any action that might suggest to the public that currently operating reactors are less than safe. Thus, each time NRC examines the safety of a particular plant, its response is colored by considerations of how its action might highlight past mistakes or require changes in other plants. Your jurisdiction is much clearer: you must consider only the interests of your constituents. UCS firmly believes that restart of TMI-1 as currently proposed is not in their interest.

One more point deserves your attention. Your cost-sharing proposal for the cleanup of Unit 2 appeared to rely on the restart of Unit 1 as the basis for raising almost one-third of the remaining cleanup costs. We agree with you that the cleanup of Unit 2 is necessary and should not be delayed. We also believe that your cost-sharing proposal represents the most promising approach developed thus far toward breaking the cleanup funding logjam. While, as you have pointed out, the two issues --cleanup of Unit 2 and restart of Unit 1-- are interrelated, we hope you will not link them so tightly that the result is two, rather than one, unsafe nuclear plants at Three Mile Island.

Sincerely,

Henry W Kendall

Henry W. Kendall
Chairman
Board of Directors

Robert D. Pollard

Robert D. Pollard
Nuclear Safety Engineer

Ellyn R. Weiss
General Counsel

Enclosure

TABLE B.1 TMI ACTION PLAN
PRIORITY RANKING SYSTEM

		Rank
I.	Safety Significance	
	High	100
	Medium	50
	Low	0
II.	Type of Improvement	
	Improves the human element	20
	Fixes the hardware	10
III.	Utilization of Resources	
	A. Project is ongoing, and resources would be wasted if stopped	20
	Project has not yet been initiated	10
	B. Staff resource requirement: Total - $50K = 1 my	
	Small (< 2 my)	20
	Medium (> 2 < 10 my)	10
	Large (≥ 10 my)	0
	C. Industry resource requirement: Total per unit over 40-yr life - 1 my = $50K	
	Small (< $1.0M)	20
	Large (> $1.0M)	0
IV.	Timing of Improvement (i.e., how quickly will the expected benefit begin to be realized after initiation of task)	
	Short-term (within one year)	30
	Near-term (within two years)	20
	Long-term (within three years)	10
	Extended beyond three years	0

Senator **Heinz**. Thank you very much.

One thing you said that was of special interest, I would like for you to clarify on page 8 where you say S. 1606 authorizes limited excise tax under the utility ratepayers, it doesn't internalize the cost of TMI in the future within the utility industry. In fact, as the bill was drafted we deliberately left open the question of assessing responsibility for these premium costs since we recognize that such a judgment remains the responsibility of the State.

Why do you make that statement? Am I wrong? Is the bill improperly drafted? How did you come to that conclusion?

Mr. **Faden**. I'm glad to hear that that is your intent because I don't believe the bill accomplishes it. We believe that by making membership in this insurance fund and in and of its premiums a condition of the reactor operating license you then make it a requirement of Federal law. And as a requirement of Federal law, our understanding of State utility law is that the State commissions are constrained from passing any of that on to the investors. They will have to treat it as an operating expense such as the cost of fuel and pass it directly to the ratepayers.

Senator **Heinz**. We will investigate that, because the intent is not to preempt utility commission decisions.

Why are you so optimistic that if we just sit back everything is going to work out? I see Mr. Kuhns in back of you. I don't know that he is that optimistic. Why are you more optimistic than he is?

Mr. **Faden**. I don't believe in sitting back, but I believe the events of the past 6 or 8 months have shown us that there are a lot of backers out there who have a lot of interest in GPU's survival. You've heard a lot of prophecies about what would happen if this utility or any electric utility went bankrupt. I don't believe that even half of them even amount to a financial catastrophe. I think all of what you've heard today, will do what they can to avoid that catastrophe. I think that there is a lot of flex in the system that there are various funding sources, some of which we mentioned here that have yet to be effectively tapped. And as one of the other witnesses who would have been on the panel said earlier this year, there was a game of chicken going on where everyone was staring and waiting for everyone else to move first. And then Governor Thornburgh has broken that pattern and we now have something moving.

We would say that if Congress does not jump in and say all right, we'll take care of the whole thing, directly or indirectly, the other parties will be first by their own institutional interests to keep that momentum that Governor Thornburgh has started.

Senator **Heinz**. Several people testified that if a solution in terms of money isn't pretty well locked up by the end of this year the cash flow situation at GPU will become so serious that they won't be able to maintain the progress on the cleanup. If rate relief, hypothetically now, is not available, would you agree with that assessment?

Mr. **Faden**. I don't have any independent data, Senator, to agree or disagree. I am not in as close touch with GPU's cash flow situation on a month-by-month basis.

The proposition you have stated sounds reasonable to me, and I think you've put your finger on the key. The ball is now in the court of PUC.

Senator HEINZ. How do you feel, if you are for the PUC, what you are inherently for is the ratepayers in central Pennsylvania bearing the burden of this. Is that really what you favor?

Mr. FADEN. We do not want to see the ratepayers by any means bear all or most of the burden. On the other hand, this is one of those situations that reminds me of the situations you often find in law school where there is a judgment proof party causing the accident and you're trying to sort out among innocent parties who must pay.

I think it would be, there is a certain equity in going back as other witnesses have mentioned, to the ratepayers who have presumably gained some benefit from this type of electric generation, and at the same time on whose behalf the PUC, well, if you look at——

Senator HEINZ. My question is, is it your point of view that it is better for the GPU ratepayers, if you're saying the ratepayers have to pay, if that's what you're saying. Now the second question is, do GPU ratepayers pay it all or should we split it among other ratepayers? What is your point of view on that?

Mr. FADEN. It's very hard to give a yes or no answer. We believe that the rest of the nuclear industry has an obligation here, and quite clearly some of their payments although we don't expect all, will flow back to their ratepayers.

Senator HEINZ. I understand that, but I'm asking you a tough question. And the question is if for the moment one takes your proposition that ratepayers should be paying something, that's what you said a moment ago, and the question is, okay, ratepayers, some of these ratepayers are going to have to pay something. Should that be just the GPU ratepayers or should it be spread among all of the ratepayers here? Those are the two choices, you know, whether it's $5 million or $500 million, or something in between. You settle on a number and then you have that little decision at least theoretically to make.

Now what are you saying? Are you for just GPU ratepayers paying that, or for spreading it out? I'm not saying it's what you want, it's just a question given those two choices, where do you come out?

Mr. FADEN. I guess I find it hard——

Senator HEINZ. Or would you like to take the fifth amendment?

Mr. FADEN. I find it hard to handle it on a yes or no level. I think there are enough mechanisms to move the cost around, and especially certain mechanisms, some that we've mentioned, to buffer the effect on GPUs ratepayers, that ought to be brought into play before that simply yes or no question gets answered.

I would especially emphasize the conservation program. GPU as you know announced an aggressive conservation and management program more than a year ago and so far as we know it has not done much to either implement it or seek the financing necessary.

Senator HEINZ. I wanted to ask you about that because you did testify that conservation by GPU could provide some very significant savings. Now if you were to trade places with the gentleman behind you, what would you advocate?

Mr. **Faden**. I would get a very cheap consulting contract that does energy conservation for utilities and ask them to develop a package, a short lead time fast pay-back conservation improvements, that can have an effect within as short a time as possible. I think that's what GAO was looking towards when they brought into play their figure of one percent reduction demand growth which is very achievable in the current environment, leading to a $469 million decrease in revenue requirements per year.

Senator **Heinz**. If a utility company sells a customer or installs for a customer at their cost a piece of equipment that achieves conservation, can they get a public utility commission to allow them to make, or recover their cost and make a reasonable return on it?

Mr. **Faden**. They do it in other States. I don't know what the Pennsylvania policy has been.

Mr. **Kinane**. It is my understanding that the Governor's office is considering the induction of legislation in Pennsylvania to encourage just that type of action. That sort of relationship between the PUC and utilities. I think there may currently be some legislative difficulties in Pennsylvania about making that happen. But we have heard there is likely to be some initiative taken and we're very pleased to see that out of these problems are coming some ways of looking at difficulties that are not, well they're utility wide and even nation wide, and we're hoping that out of this Pennsylvania will take the leadership in providing solutions that go well beyond the issue of cleanup and go to the heart of a number of problems the utilities across the country are facing.

Senator **Heinz**. You find that bankruptcy is not a realistic possibility here. I know that a lot of people testified they'd be glad to hear that, yet it does appear that most people who have testified today seem to feel otherwise that bankruptcy is a real possibility. What is the key determining factors that convince you otherwise?

Mr. **Faden**. I think what convinces us otherwise is the actions earlier this year when we were hearing talk, frequent and loud talk of bankruptcy, there was a crunch point in April when Met Ed's State taxes were due. There was a rate increase request, the crisis was developing, the PUC granted the increase to let the revolving credit agreement banks go ahead and loan that amount, and things went forward.

What we see in the future prospect is a series of such crises, some smaller and larger than others. We don't see GPU getting healthy for quite a long time, but we see it on life support systems.

Senator **Heinz**. If you don't see it getting healthy, do you think that people will really step up for that $85 million bonds?

Mr. **Faden**. Those are old bonds with old interest rates. In my cynical way I suspect that the creditors will be quite happy to extend the same amount at new interest rates.

Senator **Heinz**. These are bonds held by the public, as I understand it. These, I'm not sure, I haven't looked at it, but as I understand they are bonds held by the public. These aren't held by banks, they aren't held by insurance companies. Maybe a few of them are. These are publicly traded to the extent that anybody is trading them right now.

Mr. FADEN. I suspect that most of them are held by institutional investors. In any case, it will be the institutional investors who will be making the decision to refinance or not to refinance. And assuming by 1983 that we've had a resolution of some of the rate questions, and assuming that the Thornburgh plan or some version of it is still alive and viable, I would suspect that those creditors will see just enough life in GPU to refinance the current interest rates.

Senator HEINZ. You're one of the great optimists of all times. You mean the ones that they now enjoy, the current interest rates such as they are today?

Mr. FADEN. Such as they are today.

Senator HEINZ. I misunderstood you.

Let me ask you one question on the insurance proposal here. You said in your testimony, a most serious aspect of S. 1606 is on creating a financial disincentive to safe management by relieving the plants' owners of all but a small fraction of those costs. It seems to me that all the nuclear utilities are currently paying private insurance premiums and our bill, S. 1606 would require both a deductible and initial premiums from all nuclear utilities. So my question is, isn't what we propose really a normal insurance situation in the sense that all premium payers have an incentive to keep their operations safe so that premiums stay as low as possible?

Mr. FADEN. I think it differs from the normal insurance incentive in the way that it blankets all the damages. Once you have this initial $50 million deductible which is quite small in comparison to the possible loss, then you're assured it's reimbursed for every penney, no matter how high, of damages that it suffers. So if you have a $5 billion accident the insurer takes the cover from the current commercial sources and then pays $50 million and then maybe recovering $3 or $4 billion. That to us is neither an incentive to avoid an accident, nor is it the kind of commercially reasonable policy that the private sector would write.

Senator HEINZ. Well there is another step which is recovered of that through retrospective premiums which everybody pays.

Mr. FADEN. Yes, but they are diluted to such a degree, that——

Senator HEINZ. And you can't get $5 billion. There is a $2 billion limitation.

Mr. FADEN. We do not read the bill that way. We think that the cause that follows the $2 billion ceiling allows the NRC to raise that ceiling to any amount. We would feel somewhat better if that were redrafted to make it clear that the $2 billion was the maximum and that any variance by the NRC was an amount below that $2 billion.

Senator HEINZ. Getting back to the premiums, you started to say that you felt the premiums were so diluted?

Mr. FADEN. Yes. At this point if we're talking for hypothetical purposes on a $5 billion accident, the retrospective premium, assuming say within 5 years, 100 reactors on line and the actual payout is $4 billion, I'm talking about, I think it's $40 million, which is a substantial amount, but in comparison to the capital operating costs of nuclear powerplants, it's not huge.

Senator **Heinz**. It would be possible, I haven't thought all the consequences through, but it would be possible to redraft the insurance section so that we treat it rather the way that we treat TMI which is the utility that is having the accident, while it gets coverage payments to deal with its problems, in effect has some of that converted to the equivalent of a very long term loan which it has to pay back. That is the principle we have used here for TMI.

Mr. **Faden**. We think that would be a step foward if you took it to its full extent. There is a major difference we think between loan guarantees which is in effect what you have done with TMI which solves the cash flow shortfall of whatever utility happens to have a problem without being a direct payment or direct bail out in our frame of mind.

We think while it's still a degree of federal intervention in utility financing, we think that is a far different thing than a direct payout.

Senator **Heinz**. Thank you very much for your testimony. I appreciate your staying around.

Mr. **Kinane**. Senator, I might add that the three of us have spent a considerable amount of time working on this issue, and it comes from a profound concern with what is continuing to happen with an ongoing situation. As Mr. Faden said, we very much appreciate you and the committee taking time to try to come to some sort of a solution. These hearings in time past I think have shed some light on situations that have in turn gendered the kind of action that has generated some optimism on our part.

Senator **Heinz**. Thank you very much.

The hearing is adjourned.

[Whereupon, at 6:10 p.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses of Witnesses to Additional Questions

Department of Energy
Washington, D.C. 20585

December 1, 1981

Honorable Gary Hart
United States Senate
Suite 221, Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Hart:

Enclosed are the answers to the questions you asked Secretary Edwards at the October 20, 1981 hearing before the Senate Energy and Natural Resources Committee and the Environment and Public Works Subcommittee on Nuclear Regulation. The subject of the hearing was S. 1606 and remedial action at the Three Mile Island nuclear powerplant.

Copies of the answers have been sent to the Committee for the official record.

If you have any questions, please call Diana Diamond or Tom Pretorius of my staff on 252-4277. They will be happy to assist you.

Sincerely,

Thomas H. Pretorius

for Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

cc: Mr. Al Astrin
Committee on Energy and
Natural Resources

Question 1:

The General Accounting Office has estimated that the indirect costs to the Federal Government as a result of the Three Mile Island (TMI) accident will total about $275 million by the end of 1981. Now, the Administration has proposed to spend an additional $123 million to conduct research and development activities as part of the TMI cleanup operation.

a. Please specifically identify the information the Department expects to obtain from these R&D activities.

Answer:

DOE has committed only $123 million to R&D activities to be carried out at the Three Mile Island site. These R&D activities consist of data acquisition, waste immobilization and reactor evaluation, and will yield significant information of benefit to the nuclear community.

Instrumentation and electrical equipment will be examined both in-situ and after removal from the system, mainly to evaluate survivability, failure modes and effects, and the reliability and accuracy of measurements taken during and after the accident. The information gained will be used to recommend revisions to instrumentation standards, regulatory guides, and operation and maintenance manuals, and to develop more realistic accident progression and consequence analytical models.

Radiation and environment surveys, and samples from the containment building, auxiliary building, and primary system will provide a data base to determine the transport and deposition characteristics of various radioisotopes, establish the working environment conditions, and indicate the relative effectiveness of decontamination. This information will be used to assess and improve existing models for fission product behavior during accidents. These models are used in nuclear powerplant design, operation, and licensing.

Decontamination tests will be conducted to facilitate decontamination technology improvements which minimize radiation exposure to nuclear powerplant workers, and which permit more extensive post-accident examination and more efficient defueling operations. The technology will be applicable to maintenance and decommissioning operations of all civilian nuclear powerplants.

The nature and extent of the hydrogen generation and deflagration phenomena that occurred after the TMI accident will be assessed, and this understanding will be used to assess the design, operation and licensing requirements relating to hydrogen release at other civilian nuclear powerplants.

The reactor core and other reactor components will be examined in-situ, during and following the defueling, to determine their condition and to analyze failure modes and effects. Selected portions of the damaged core will also be examined off-site. This program will provide data and information for evaluating present licensing criteria, developing future licensing criteria, assessing and developing computer models used to analyze the progression and consequences of severe accidents; and evaluating improvements to reactor design, operation and maintenance.

A program will be conducted to perform R&D on treatment and disposal techniques for abnormal reactor waste products. The knowledge gained from this program will contribute substantially to the technology for processing and disposing of unique waste forms that result from abnormal operations and accidents on commercial nuclear powerplants.

Question 1.b:

b. What does the Department intend to do with this information? If it intends to disseminate this information to utilities, why should utilities not then pay the costs of the R&D activities that produce this information?

Answer:

The Department intends to evaluate and disseminate this information to all parties involved in the design, construction, operation, regulation and licensing of nuclear powerplants in order to develop and improve measures to enhance the safety and operating reliability of these plants and develop methods of handling major abnormal events. This R&D role is consistent with the statutory responsibilities of DOE. For example, the "Nuclear Safety Research, Development and Demonstration Act of 1980" (Public Law 96-567) in section 2(b) states:

> "It is declared to be the policy of the United States and the purpose of this Act to establish a research, development, and demonstration program for developing practical improvements in the generic safety of nuclear powerplants..."

and in section 2(a)(4):

> "Proper role of the Federal Government in assuring nuclear power plant safety, in addition to its regulatory function, is the conduct of a research, development and demonstration program to provide important scientific and technical information which can contribute to sound design and safe operation of these plants."

The utilities are paying for a portion of the cost of TMI Unit 2 R&D activities under the sponsorship of Electric Power Research Institute. In addition, the utility industry has been requested to make a much larger collective contribution directly to the cleanup activities, and according to recent announcements by the Edison Electric Institute, have committed to do so.

Question 1.c:

To what extent will the Department's proposed R&D program at TMI include activities--such as removal, processing, and disposal of the core--that the owners of TMI would have to undertake anyway to properly clean up the powerplant? Please provide a specific list of activities and cost estimates.

Answer:

The Department's R&D program will necessarily involve the removal of a substantial part of the reactor core and internals from the vessel. There will be off-site examination of selected portions of these components. To satisfy the R&D needs to determine the condition of the core, the defueling will have to be accomplished in a manner that will preserve the evidence of the accident. This results in additional requirements that ordinarily would not be implemented by GPU in the defueling operation.

The presently estimated cost of the Department's Waste Immobilization and Reactor Evaluation (WIRE) program is $75 million. In addition, the Department's Data Acquisition Program is estimated to cost about $48 million, of which $12 million has already been expended. Because the nature and extent of reactor core damage is not known, and could vary between very wide extremes, we are unable to estimate just how much of these research costs will directly offset GPU costs.

Question 1.d:

Please provide a list of reactor decontamination and decommissioning activities, or experiments on decontamination and decommissioning of reactors, that the Department or its predecessor agencies have conducted.

Question 1.e:

For each of the activities or experiments listed under d., please summarize the information obtained from such activities or experiments, and the areas in which this information will either duplicate or differ from information generated by the Department's R&D program proposed as part of the TMI cleanup operation.

Answer:

The enclosed tabulation (Attachment 1) shows the reactors under DOE, ERDA, or AEC cognizance in which decommissioning has been accomplished by safe storage (mothballing), entombment or dismantling. The enclosed Section 3 of Report NUREG/CR-0130* (Attachment 2) provides a complete list of decommissioned reactors, and briefly describes the decontamination and decommissioning methods employed for the most significant of these facilities. Report DOE/TIC-8200-R-43** (Attachment 3) also enclosed, lists all reactors shutdown or dismantled, categorized according to their primary function or purpose.

The most significant development work sponsored by DOE and predecessor agencies on various methods of decontamination for nuclear facilities is summarized in a fourth enclosure (Attachment 4). As indicated, some of these methods have been successfully demonstrated on various types of nuclear facilities, and others are still being developed. With the exception of destructive methods (such as by the use of explosives), many of these techniques are being considered for application to various phases of TMI-2 decontamination and defueling.

The report on "Nuclear Accident and Recovery at Three Mile Island" prepared by the Subcommittee on Nuclear Regulation, Senate Committee on Environment and Public Works,*** described the reactor accidents that preceded the TMI-2 accident and the ultimate disposition of these facilities. The magnitude and complexity of decontamination and cleanup required for the TMI-2 will greatly exceed that from this previous experience, because the reactor plant is by far the largest (2772 MWt) and is the only commercial power plant to sustain an accident involving substantial core damage. While the decontamination processes and techniques developed or under development have been demonstrated in experiments and on individual facilities, as briefly outlined above and in the enclosures, this work has been much more limited than will be required for the TMI-2. Decontamination of reactor plants to reduce personnel exposure levels during maintenance operations, or as a part of permanent shutdown activities generally would involve localized areas and much lower radioactivity levels. In the absence of significant reactor damage, defueling also would be accomplished by normal or near-normal methods.

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* NUREG/CR-0130, "Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station," June 1978 prepared by Battelle Pacific Northwest Laboratory for the U.S. Nuclear Regulatory Commission.

** DOE/TIC-8200-R-43, "Nuclear Reactors Built, Being Built, or Planned," April 1981 issue, prepared by Technical Information Center, DOE.

*** Nuclear Accident and Recovery at Three Mile Island, A Special Investigation", Subcommittee on Nuclear Regulation for the Senate Committee on Environment and Public Works, U.S. Senate, Serial No. 96-14, June 1980.

As distinguished from past practices and experience, the TMI-2 decontamination activities must be designed to:

(1) facilitate obtaining as much information on the condition of the reactor and major components as practical, both in-situ and following removal operations.

(2) demonstrate effective decontamination processes applied on a larger scale than ever before, and involving high radioactivity levels from both fission products and activated corrosion products.

(3) produce as low as reasonably practical working environment radiation levels for the extensive cleanup and defueling operations, and

(4) allow for plant recovery, and the requalification of major components and structures where feasible and economic.

Therefore, the development and demonstration of decontamination technology on the scale and under the unique conditions and requirements of the TMI-2 represents a formidable extension of our current experience and capabilities.

Attachment 1 - Question 1.d-e

Decommissioned Reactors Under DOE-ERDA-AEC Cognizance

Name and Location	Reactor Type	Power Rating	Type of Decommissioning	Year
BONUS (Boiling Nuclear Superheater Power Station) Ricon, Puerto Rico	BWR with nuclear superheating	16.5 MWe 50 MWt	Entombed	1970
Hallam Nuclear Power Facility Hallam, Nebraska	Graphite Moderated Sodium Cooled	75 MWe 240 MWt	Entombed	1969
Piqua Nuclear Power Facility Piqua, Ohio	Organic cooled and moderated	11.4 MWe 45.5 MWt	Entombed	1969
Elk River Reactor Elk River, Minn.	Boiling water	22 MWe 58.2 MWt	Dismantled	1974
HTR (Hanford 305 Test Reactor) Richland, Washington	Graphite Moderated	Negligible	Dismantled	1977
HPR's (Hanford Production Reactor), 8 total Richland, Washington	Graphite Moderated, Water Cooled		Safe Storage 4 retired 4 standby	1965-1971
EBR-1 (Experimental Fast Breeder Reactor) NRTS, Idaho	Liquid metal Cooled	150 KWe 1,400 KWt	Deactivated, decontaminated, Converted for Public Access	1975
SRE (Sodium Reactor Experiment) Santa Susana, California	Graphite Moderated, Sodium Cooled	5.7 MWe 20 MWt	Safe Storage (1967) Dismantling (Started 1974)	Being Completed

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Above listing excludes military reactors, space propulsion reactors, Space Nuclear Auxiliary Power (SNAP)

Attachment 2 - Question 1.d-e

Section 3.0 - Review of Decommissioning Experience

Abstracted From:

Technology, Safety and Costs of Decommissioning a Reference
Pressurized Water Reactor Power Station
NUREG/CR-0130, Vol. 1 - June 1978

Prepared by Battelle Pacific Northwest Laboratory
for the U.S. Nuclear Regulatory Commission

3.1 NUCLEAR REACTOR DECOMMISSIONING HISTORY

The decommissioning of nuclear reactor facilities is a relatively well-developed technology. In the United States, the term "decommissioning" means to retire from active service, without the option of resuming the original operations. Historically, decommissioning of nuclear facilities did not necessarily result in a terminal condition. In fact, the Safe Storage (mothballing, layaway, and entombment) approaches that have been used should be recognized as only one stage in the decommissioning process. Current NRC philosophy indicates a decommissioning approach that ends in the termination of the facility's nuclear license and the release of the property for unrestricted use within a finite period of time.

Past decommissionings of licensed reactor facilities have been accomplished by Safe Storage (mothballing or entombment), and by dismantlement or by a combination of these alternatives. To date, alternative selection has been based primarily on cost. Whichever approach to decommissioning was selected, it provided for the protection of the safety of the public and for minimal adverse impacts on the environment. Small research reactors have been decommissioned primarily by dismantlement. Licensed nuclear power plants were usually placed in Safe Storage (mothballed) in which they continue to retain a reactor "possession-only" [a] license and the associated licensee responsibilities.

Lear and Erickson[2] report that between 1960 and mid-1976, a total of 65 licensed nuclear reactors had been or were in the process of being decommissioned. Of these, 5 were nuclear power plants, 4 were demonstration nuclear power plants, 6 were licensed test reactors, 28 were research reactors, and 22 were critical facilities. Of the fifty licensed research reactors and/or critical facilities decommissioned or scheduled to be decommissioned, all but four had been or will be totally dismantled with the licenses terminated. The remaining four will retain a possession-only type license for an indefinite period in Safe Storage.

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[a] Title 10 CFR Part 50 § 50.59, "Authorization of Changes, Tests and Experiments" and § 50.90, "Application for Amendment of License or Construction Permit" provides the rules by which a licensee may amend his license to attain a possession-only status. Once this possession only license is issued, reactor operation is not permitted.

[2] G. Lear and P. B. Erickson, "Decommissioning and Decontamination of Licensed Reactor Facilities and Demonstration Nuclear Power Plants." Proceedings of the First Conference on Decontamination and Decommissioning (D&D) of ERDA Facilities, CONF-750827 pp. 31-45, Idaho Falls, ID, August 1975.

Three of four government-owned nuclear power demonstration plants (BONUS, HALLAM, and PIQUA) have been entombed as a decommissioning alternative.(3,4,5) The fourth demonstration plant, Elk River Reactor, remains the largest project to date that has been completely dismantled and removed from its site.(6)

Two useful references concerning past decommissioning activities are: The Proceedings of the First Conference on the Decontamination and Decommissioning of ERDA Facilities, August 1975 (Reference 7), and A Preliminary Study of the Decommissioning of Nuclear Reactor Installations, July 1977 (Reference 8). A tabulation of nuclear reactor decommissionings is presented in Table 3-1. Descriptions of some of the more significant reactor decommissionings that follow are excerpted, in part, from Reference 8.

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(3) Boiling Nuclear Superheater Power Station Decommissioning Final Report. WRA-B-70-500, Docket-1154-2, Puerto Rico Water Resources Authority and United Nuclear Corporation, September 1, 1970.

(4) Retirement of Hallam Nuclear Power Facility. AI-AEC-12709, Atomics International, Canoga Park, CA, May 1970.

(5) C. W. Wheelock, Retirement of the Piqua Nuclear Power Facility. AI-AEC-12832, Atomics International, Canoga Park, CA, April 1970.

(6) Final Elk River Reactor Program Report. COO-651-93, Revised, United Power Association, Elk River, MT, November 1974.

(7) Proceedings of the First Conference On Decontamination and Decommissioning (D&D) of ERDA Facilities, CONF-750827, Idaho Falls, ID, August 19-21, 1975.

(8) A. Martin, et al., A Preliminary Study of the Decommissioning of Nuclear Reactor Installations, ANS Report No. 155, July 1977. Associated Nuclear Services, 123 High Street, Epsom, Surrey, KT19 8EB.

TABLE 3-1. A Digest of Nuclear Reactor Decommissionings[a]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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3.1.1 Carolina Virginia Tube Reactor (CVTR), Parr, South Carolina

The CVTR was a 65 MWt heavy water cooled and moderated pressure tube reactor. The decision to decommission the plant was taken in 1967 after 4 years' experimental operation. The plan adopted was to deactivate the reactor, by the Safe Storage mode, surrender the facility license, and to use the Containment Building and Reactor Building for long term storage of remaining radioactive materials under a by-product license.

All fuel and heavy water were shipped off site. The facility license was amended from operation to possession-only status and an authorization obtained from the AEC to dismantle the facility. The facility license was replaced by the by-product license on completion of the decommissioning and final AEC inspection. Remaining radioactive materials were stored, where possible, in their normal operating position. The control rod drive system was deactivated. Voids containing radioactive materials were sealed, valves were secured and access hatches to the Containment Building were bolted shut so that special equipment was required to open them. A double security barrier was placed around all areas containing radioactive material.

The decision to decommission the reactor with minimum dismantling and removal of radioactive materials meant substantial cost-savings and minimum radiation exposure to plant personnel during the operation. Decommissioning of the CVTR is described in Reference 9.

3.1.2 Hallam Nuclear Power Facility, Hallam, Nebraska

The Hallam Facility was located at the Sheldon Station of the Consumers' Public Power District, first became operational in 1963, and was shut down following moderator element problems. Owing to the cost of repair, doubtful value of continued operations and a shift of emphasis, the AEC ordered retirement of the reactor in 1966. The reactor was designed to produce 256 MWt and was sodium cooled with a graphite moderator. Physical activities involved in carrying out the reactor retirement by entombment were completed in September 1969.

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(9) W. Willoughby and H. T. Babb, "CVTR," Nuclear News. 13: 48, June 1970.

All fuel and bulk sodium were removed from the site. Residual sodium was rendered inert and all radioactive residues were disposed of by removal to a federal repository. Radioactive components and materials remaining on site were sealed in the underground vaults of the remaining structure. Two 0.5 in thick steel plates were welded over the reactor vessel and reactor area. All penetrations were weld sealed and the whole covered with layers of tar, earth, and plastic film. Heat exchangers were dismantled and removed. System components were removed and the reactor and vaults were sealed by a construction contractor under the direction of the utility's Health and Safety Administration.

No special techniques or equipment were reported to have been developed for this operation. Residual sodium was rendered passive by purging with a gaseous nitrogen-steam mixture. Normal operational procedures were used for the removal of all radioactive materials.

A total of 300,000 Ci of radioactivity, mainly associated with the reactor vessels and internals, was sealed in the reactor and underground vaults. The bulk sodium removed from the primary circuit was slightly radioactive (7 Ci in the 250,000 kg shipment). A special sodium cleaning facility was erected for the decontamination of system components. The site is periodically inspected by the State of Nebraska authorities. In addition to being archived, drawings, reports, analyses and photographs relating to the buried structures were encapsulated and placed within the structure in two locations.

Details of the retirement of the Hallam facility are reported in References 10,11, and 12.

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(10) A. Giambusso, "Four Decommissioning Case Histories," Nuclear News, 13:40, June 1970.

(11) W. F. Heine and B. F. Ureda, Decontamination and Disposition of Hallam and Piqua Reactors. Reference 7, p. 139.

(12) HALLAM Nuclear Power Facility, Entombment. Report on Retirement of HALLAM Nuclear Power Facility, AI-AEC-12709, May 1970.

3.1.3 Piqua Nuclear Power Facility, Piqua, Ohio

The Piqua Facility, an organically cooled 45 MWt power reactor went critical in 1963, was shutdown in 1966 because of coolant problems and was decommissioned by entombment in 1969.(13) The Piqua site was purchased by the U.S. Government and leased to the City of Piqua. The decommissioning activities were undertaken by City of Piqua personnel with engineering and safety support from Atomics International. Consulting was provided by the Battelle Memorial Institute.

A reactor retirement plan, work specifications and detailed procedures were prepared. A safety analysis and study evaluation of residual radionuclides was conducted and reported.

Reactor core components, fuel and other radioactive materials were shipped to a federal repository under normal operating procedures. Organic coolant was disposed of by burning. Contaminated piping and equipment inside the Reactor Building was removed or decontaminated and the Reactor Building converted to a warehouse. The reactor vessel, thermal shield, grid plates and support barrels remained in place; the vessel was filled with sand, weld sealed and all penetrations into the reactor complex were plugged. The complex was then sealed with a waterproof barrier and concrete cover. The development of special equipment or techniques was not required.

The total radioactivity of significant radionuclides sealed in the facility was 260,000 Ci. In addition to being archived, detailed records of all operations were duplicated and placed in sealed metal boxes at the site.

Cost estimates or actual cost totals were not available from the literature studied. Decommissioning lasted from July 1966 to August 1969.

3.1.4 Boiling Nuclear Superheater (BONUS) Power Station, Ricon, Puerto Rico

This was a 50 MWt boiling water reactor with nuclear superheat which was entombed. The reactor ceased operation in 1967 and the operating contract was terminated a year later. Increasingly stringent AEC design criteria involving expensive retro-fitting, poor economics, low availability and change in emphasis away from the superheat program led to the decision to decommission. The utility, the Puerto Rico Water Resources Authority, was to reduce the decommissioned plant to the status of a static exhibition open to the public for a maximum of 5 years. The utility was responsible for implementing decommissioning, preparing documents, scheduling and carrying out the operations. Control of the program was achieved in accordance with activity specifications and detailed procedures. All activities except entombment construction were allowed to be implemented before issue of the AEC dismantling order.

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(13) Atomics International. Retirement of the Piqua Nuclear Power Facility. AI-AEC-12709, 1969.

The work was divided into four phases:

Phase 1	Initial radiation survey; sampling of selected plant equipment and piping; shipping of spare unused fuel assemblies; removal of spent fuel from pressure vessel; permanent disabling of control rod drive mechanism.
Phase 2	Shipping of spent fuel, radioactive sources and wastes; decontamination; preparation for entombment.
Phase 3	Construction of entombment structure.
Phase 4	Preparation of documentation for removal of license requirements; handing over facility for exhibition purposes.

A radiological safety analysis was conducted to assist design of the entombment structure. The initial entombed radioactivity total was approximately 50,000 Ci comprising 71% ^{55}Fe, 29% ^{60}Co, and <1% ^{63}Ni. The dose rate at the entombment surface was not to exceed 0.4 mR/hr at 1 cm except for permissible hot spots up to 1 mR/hr as long as an average surface radiation level of 0.2 mR/hr was not exceeded.

A hazard assessment was made of the decommissioned plant for a postulated design basis accident (severe earthquake followed by tidal wave flood). Even on the basis of the most pessimistic assumptions it was calculated that such an accident would not result in unacceptable radiation doses.

The decommissioning aspects of the BONUS facility are described in more detail in Reference 14.

3.1.5 Walter Reed Research Reactor, Washington DC

The Walter Reed Research Reactor, built in 1961, was dismantled 10 years later, in 1971. The facility was an Atomics International Model L-54 homogeneous fueled reactor having a maximum operating power of 50 kW. The reactor was surrounded by a four-story research institute and was housed 20 ft below ground with only limited access via elevators. Heavy duty cranes and equipment could not be used.

The fuel, 26.5 liters of aqueous $UO_2\ SO_4$ and 1215 g of ^{235}U enriched uranium, was removed in specially shaped containers. Recombiner unit water and decontamination solutions were solidifed in vermiculite and shipped in shielded stainless steel drums.

A hydraulic device called a 'Darda' rock splitter was used to demolish the heavy, dense concrete biological shield.(15) Very high lateral pressures were generated by this tool which was inserted in drilled holes. Fracture planes were established by this method and conventional road surface breakers were used to separate the concrete. Normal research institute operations continued almost uninterrupted during dismantlement and decontamination. Radioactive materials were removed at nights and on weekends.

No information is available on costs or on radiological experience. A brief-review of the reactor dismantlement is given in Reference 16.

3.1.6 Pathfinder, Sioux Falls, South Dakota.

Pathfinder was a 66 MWe boiling water reactor with integral nuclear superheater that was placed in Safe Storage After discovering component

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(14) Boiling Nuclear Superheater Power Station Decommissioning Final Report, WRA-B-70-500, Prepared by Puerto Rico Water Resources Authority (San Juan, Puerto Rico) and United Nuclear Corporation (Elmsford, New York), September 1970.

(15) "A World's First: Darda Splitter Used for Dismantling a Reactor," Construction. February 21, 1972.

(16) B. G. Bass and E. C. Holman, "The Walter Reed Research Reactor Dismantling Project." Trans. Am. Nucl. Soc. 15:897, November 1972.

failures following a forced shutdown in 1967, the decision was taken to convert the plant to conventional operation replacing the reactor with three fossil-fueled boilers. The operating license was eventually replaced by a two-part license, a Part 50 possession-only license for the isolated reactor and fuel storage and a Part 30 by-product license. Major activity reported concerned the conversion of the turbine cycle equipment.(17) Piping and turbine components were decontaminated during this operation. Decontamination fluids were barrelled, solidified and shipped for burial. Over three hundred 208-liter (55-gal) barrels of solidifed waste were removed from the site. Total cost was estimated to be $3.7 million.

3.1.7 Saxton Nuclear Experimental Facility, Saxton, Pennsylvania

The Saxton plant was a 23.5 MWt prototype pressurized water reactor supplying steam to an existing 10 MW turbo-generator. The reactor was located in the Saxton Steam Generating Station of the Pennsylvania Electric Company and operated by the Saxton Nuclear Experimental Corporation (SNEC) under an AEC Title 10 part 50 License DPR-4. Decommissioning was accomplished by placing the facility in Safe Storage. SNEC was responsible for all decommissioning activities including those of contractors. These activities were carried out in accordance with written procedures approved by SNEC. Decommissioning was completed during 1973.

Prior to decommissioning, an extensive planning program was carried out which included:

- an assessment of the optimum way of decommissioning the plant;
- preparing the decommissioning plan;
- Licensing the plan with AEC.

A decision was reached to proceed with a minimum decommissioning(b) and included the option of removing all radioactive material after a delay period (of, say, 50 years). This procedure would involve three levels of licensing:

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(17) M. M. Bjeldanes, "PATHFINDER" Nuclear News, 13 p: 56, June 1970.

(b) As used herein, "a minimum decommissioning" necessitates the use of continued surveillance; this corresponds to the Regulatory Guide 1.86 definition of "mothballing."

- Reduction in status from 10CFR Part 50, Utilization, to Part 50 Possession Only.
- Transition from Part 50, Possession Only, to Part 30, Status.
- Reduction from Part 50, Possession Only, to Part 30, Status.

Details of the planning and licensing for the Saxton facility are given in References 18 and 19.

3.1.8 Experimental Breeder Reactor, EBR-1, Idaho Nuclear Engineering Laboratory, Scottsville, Idaho

EBR-1 was the world's first source of nuclear electricity, first demonstrated in 1951. This fast breeder reactor had a eutectic alloy sodium-potassium coolant. EBR-1 suffered a core melt-down accident in 1955. It was eventually decided to make EBR-1 the site of a National Historic Monument and ceremonies took place in 1966. Public access could not be permitted due to radioactive contamination and hazardous accumulations of NaK. Steps to correct this situation were taken in 1973 when a decontamination and decommissioning program was initiated. The program plan was performed and completed by Aerojet Nuclear Company, assisted by Allied Chemical Corporation and Argonne National Laboratory. Information regarding the deactivation steps taken are given in Reference 20.

3.1.9 Elk River Reactor, Minnesota

The Elk River Reactor (ERR) was a 58 MWt indirect cycle, natural circulation boiling water reactor, built under a USAEC contract and operated by the United Power Association (UPA). Commercial operation lasted four years from 1964 until final operation in 1968. UPA waived its option to purchase the plant and agreement was eventually reached between the AEC and UPA to dismantle the plant and restore the site to as near as possible its original condition.

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(18) B. J. Reckman and C. R. Montgomery, Planning and Licensing for the Decommissioning of the Saxton Nuclear Experimental Facility. ASME Paper 73-WA/NE-8, 1973.

(19) Saxton Decommissioning Plan and Safety Analysis Report. Docket 50-146, Saxton Nuclear Experimental Corporation, General Public Utilities System, Reading, PA. April 1972.

(20) J. D. Cerchione, et al, "EBR-1 and Borax-V Reactor Deactivation," Trans. Am. Nucl. Soc. 8:114, June 1965.

Prior to decommissioning, a program was prepared that was to be carried out in three overlapping phases: planning, dismantling and final site closure.

Dismantling was carried out in three overlapping stages:

- removal of the most highly radioactive components, e.g. reactor internals and pressure vessel
- removal of systems and equipment outside the biological shield which contained low level contamination
- removal of noncontaminated structures

It was decided to use plasma arc cutting under water and oxy-acetylene cutting in air to dismantle the inner and outer thermal shields and the pressure vessel. Plasma arc cutting was not used on the outer thermal shield because of the high temperatures that would vaporize the lead liner. A full test and development program was carried out on the cutting processes to be used. These included bench scale tests and full scale mockup tests on the plasma arc cutting procedures and equipment and separate tests on the in-air cutting procedures. A manipulator system for remote handling of the cutting torches was developed at Oak Ridge National Laboratory (ORNL) for this operation.

For the removal of concrete, conventional drilling methods were feasible up to a depth of 0.6 m but were uneconomical due to the time element. Controlled use of explosives (0.7 kg maximum dynamite charges) was successful in removing the ERR biological shield with adequate safety and without release of radioactive contamination. An important consideration was that the Reactor Building was located only some 67 m from an operating electrical generating facility.

The total project cost including technical support services was $6.15 million, the highest constituents of costs were material disposal ($1.25 million), removal and disposal of the bio-shield ($1.23 million) and removal and disposal of the pressure vessel ($1.06 million) in shallow land burial grounds.

The decommissioning activities are described in References 21, 22, and 23.

3.1.10 Peach Bottom 1, York County, Pennsylvania

Peach Bottom 1, a 40 MWe prototype high temperature gas-cooled reactor, began commercial operation in 1967. The plant was scheduled to be shut down in 1974 after seven years' commercial operation. The decision to decommission was taken because of the high cost of retrofitting modifications required to meet more stringent safety criteria.

A full evaluation of the implications of decommissioning as regards the schedule, safety costs and licensing was carried out by the utility, Philadelphia Electric Company, and the SUNTAC Nuclear Corporation. Several decommissioning alternatives were considered in light of the following criteria:

- Current state and federal licensing problems and possible changes in regulations that could affect the cost or viability of the options.
- Diminishing licensing obligations throughout the life of each option.
- Cost of disposal of radioactive materials.
- Cost of preparing the detailed decommissioning plan, technical specifications and safety analysis reports for each option considered together with an environmental impact statement for entombment and removal options.
- Decontamination requirements for each option.
- Schedule considerations influencing the availability of operating staff.

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(21) R. Blumberg, "Technology for Dismantling Large Radioactive Structural Components," Proceedings of the First Conference of ERDA Facilities. CONF-750827, p. 71, Idaho Falls, ID, August 1975.

(22) B. J. Davis, Elk River Reactor Dismantling. ibid, p. 83.

(23) D. McConnon, "Operational Health Physics during Dismantling of the Elk River Reactor." Proceedings of the 3rd International Congress of IRPA, Washington, DC, 1973.

The decommissioning plan included a schedule of operations to take place over a period of 24 months and contained manpower details, schedule of activities, safety analyses, proposed surveillance program and projected final facility status.

The option chosen for Peach Bottom 1 was that of minimum decommissioning, reducing the controlled access area to include only the Reactor Containment Vessel and maintaining the facility under a Part 50 possession only license. After a period of 50 years, major radioactive materials would be removed to a licensed burial ground. No significant dismantling of the facility took place during initial decommissioning. Fuel handling equipment was disabled and kept in place after external decontamination. All penetrations into the containment were cut and capped outside the containment vessel wall. A 12 mm pipe and filter vent was provided to prevent any pressure build-up in the vessel.

No special techniques or equipment were reported to be required for decommissioning. Normal operational procedures applied to the removal of fuel and radioactive materials.

Although final costs for decommissioning Peach Bottom are not available, the estimated cost obtained from the pre-decommissioning evaluation was just over $2 million at 1974 prices for the minimum decommissioning option including initial cost, 50 year maintenance and disposal of radioactive materials. It was estimated that the initial cost of minimum decommissioning (approximately $500,000) would be about equal to the cost of minimum decommissioning of a similar sized light-water reactor since there was a high ratio of engineering and licensing cost to field cost.(24)

It was also reported that any significant modification to the original Peach Bottom 1 design would have been unlikely to make decommissioning significantly easier, and it was also felt that this was probably true of large power reactors being constructed at the time. The costs of any radical changes would be significant, and in any case, existing design features were inherently beneficial when the minimum decommissioning option was selected.

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(24) R. J. Stouky and E. J. Kohler, Planned Decommissioning of the Peach Bottom Unit No. 1 High Temperature Gas-cooled Reactor. ASME Paper 73-WA/NE-7, 1973.

3.1.11 Sodium Reactor Equipment (SRE), Santa Susana, California

This plant and its associated auxiliary facilities have been maintained in storage since 1968 awaiting funds for dismantling.

A remote manipulator system was to be developed for use in cutting up system components. The design developed by Oak Ridge National Laboratory for dismantling Elk River Reactor was adopted by Atomics International for use on the Sodium Reactor Experiment. A vessel mock-up was constructed to check manipulator operation. Cutting would be carried out under water. Explosive demolition techniques similar to those used for the Elk River Reactor were used for the removal of concrete structures at this and other Department of Energy (DOE), formerly ERDA, facilities at Santa Susana. Remote techniques for piping and component removal such as explosive pipe cutting used in offshore drilling operations were to be used wherever possible.

A Dismantling Plan was prepared together with Activity Requirements and Detailed Working Procedures. During decommissioning, all quality assurance and health, safety and radiation services records were maintained for permanent reference. The final report for the facility will record the effort, schedule and costs expended compared to original estimates. In addition, any special problems and their solution will be noted together with any tooling or process developments that would be useful for future programs. Approval of remaining radioactivity levels by DOE in agreement with Atomics International and the California Bureau of Radiological Health will also be recorded in the final report.

Decommissioning was commenced with the preparation of the SRE Dismantling Plan in 1975. Eight other DOE facilities at the AI Santa Susana site have also been included in an overall program of decontamination and disposition, some of which have been completely dismantled. Removal of the 20 MW SRE facility is described in Reference 25.

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(25) W. F. Heine and A. W. Graves, Preparation for Decontamination and Disposition of the Sodium Reactor Experiment and other ERDA Facilities at AI. Ref. 7, p. 417.

3.1.12 Other Nuclear Reactor Decommissioning Experience[a]

Three Oak Ridge National Laboratory (ORNL) reactors were dismantled in 1954 and 1955.(26) These were the Homogeneous Reactor Experiments (HRE-1 and HRE-2 reactors) and the Aircraft Reactor Experiment (ARE reactor).

The Hanford Production Reactors have been retired.(27) The reactor structures were considered to be adequate to safely contain the radioactive material inventory. Fuel was removed, cavities were dried, the tubes were capped, and the control rods were disconnected. Routine surveillance has been provided.

Two nuclear power plants unique to military utilization were the U.S. Army's PM-2A and the U.S. Navy's PM-3A. The PM-2A was a 1.5 MWe power reactor system installed in the cut-and-cover snow trenches of Camp Century, the "City Under the Ice", in Northern Greenland. It was completely dismantled and removed from its site in 1964.(28) The complete removal of PM-3A, a 9.4 MWt unit, formerly located at the McMurdo Station, Antarctica, took about two years and was completed in early 1975.

The SL-1 Reactor at Idaho Falls was completely dismantled following an accident in 1961. High radiation fields and the presence of wide-spread contamination complicated the operation. The reactor and the building were completely demolished and the radioactive wastes were transferred to a local burial ground.(29)

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[a] Costs and occupational radiation exposures for these decommissioning projects were unavailable from the literature referenced.

(26) S. E. Beall, "Experiences in the Decommissioning and Dismantling of Three ORNL Experimental Reactors," Trans. Am. Nucl. Soc. 8:113, June 1965.

(27) S. L. Nelson, "Operational Procedures in Deactivation of the Hanford Production Reactors." Trans. Am. Nucl. Soc. 8:116-117, June 1965.

(28) J. P. Franklin, "Removal of the PM-2A Nuclear Power Plant from Camp Century (U.S. Army)," Trans. Am. Nucl. Soc. 8:117, June 1965.

(29) Final Report of SL-1 Recovery Operation, May 1961 through July 1962, IDO-19311 (1962).

3.2 DECOMMISSIONING HISTORY OF NONREACTOR FUEL CYCLE FACILITIES

Many other fuel cycle facilities, ranging in size from prototype fuel reprocessing plants to one-room experimental laboratories, have been safely decommissioned. A partial listing of some of these facilities is given in Table 3-2. In many cases, the precautions and controls necessary for dealing with plutonium, polonium, and radium had to be considered. It should be noted that this is an additional consideration not normally present when decommissioning nuclear reactors. From the variety of facilities shown in Table 3-2, it is evident that the technology and expertise to decommission any type of fuel cycle facility has been effectively and safely demonstrated.

TABLE 3-2. Nonreactor Nuclear Facilities That Have Been Decommissioned

Facility	Location	Year Decommissioned	Type of Decommissioning	Reference
Polonium-210 Facilities (Units III & IV)	Mound Laboratory; Miamisburg, Ohio	1960	Partial Dismantlement; decontaminated to release levels	30
Cave Facility (Radium-226 and Actinium-227 Processing Facility)	Mound Laboratory; Miamisburg, Ohio	1967	Partial Entombment, remainder decontaminated to release levels	30
Prototype Reprocessing Plant	Fontenay-aux-Roses Nuclear Research Center, France	1963	Dismantled	31
SM Facility (Space Programs, Plutonium-238 Facility)	Mound Laboratory; Miamisburg, Ohio	1972	Decontaminated and placed in Safe Storage (Mothballed); awaiting Final disposition by DOE (formerly ERDA)	30
Plutonium Filter Facility (Building 12)	Los Alamos, (LASL) NM	1973	Dismantled	32
Laboratory For Plutonium Criticality Studies (P-11)	Hanford Operations (ERDA) Richland, WA	1974	Dismantled	33
Plutonium Physics Study Building No. 21	Area 33, LASL	1975	Dismantled	34
Eurochemic Reprocessing Plant (Demonstration)	Mol, Belgium	1976	Dismantled	35

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(30) J. R. Garner, W. P. Davis, "A Summary Review of Mound Laboratory's Experience in D&D of Radioactive Facilities (1949-1973)," in Proceedings of the First Conference on Decontamination and Decommissioning (D&D) of ERDA Facilities, CONF-750827, pp. 225-231, Idaho Falls, ID, August 19-21, 1975.

(31) P. Cerre, "Demantelement de l'usine pilote d'extraction du plutonium de Fontenay-aux-Roses," Bull. Inf. Sci. Tech., pp. 55-74, Paris 70, 1963.

(32) E. L. Christensen, et al., "Demolition of Building 12, An Old Plutonium Filter Facility," in Proceedings of the First Conference on Decontamination and Decommissioning (D&D) of Erda Facilities, CONF-750827, pp. 303-324, Idaho Falls, ID, August 19-21, 1975.

(33) R. D. Rolle, "Demolition and Removal of Plutonium-Contaminated Facilities at Hanford," Trans. Am. Nucl. Soc. 22:750, San Francisco, CA, November 1975.

(34) E. J. Cox, et al., "Disposition of TA-33-21, A Plutonium Contaminated Experimental Facility," in Proceedings of the First Conference on Decontamination and Decommissioning (D&D) of ERDA Facilities, CONF-750827, pp. 185-200, Idaho Falls, ID, August 19-21, 1975.

(35) E. J. Detilleux, "Status of the Decommissioning Program of the Eurochemic Reprocessing Plant," Proc. of the International Symposium on the Management of Wastes from the LWR Fuel Cycle, CONF-76-0701, Denver, CO, July 11-16, 1976

3.3 LESSONS FROM PAST DECOMMISSIONINGS

We have learned from past decommissionings some of the aspects of the practicality and acceptability of the various decommissioning approaches. The necessary technology not only exists, but has been safely and successfully applied numerous times to a wide variety of nuclear installations. Because of the unique sizes, locations, and conditions under which past decommissionings took place, it can be seen that no two had identical problems or conditions. However, the basic approach to any mode of decommissioning remains virtually unchanged; i.e., the gathering of staff manpower, a period of planning and preparation, followed by the desired decommissioning operations. This fundamental course of events varies only in the numerous plant-specific refinements applied to the various stages of decontamination and decommissioning. The area of greatest challenge lies in improving job-specific technology such as remote cutting equipment and improved decontamination techniques.

Past decommissionings have led us to more carefully consider the socio-economic impacts on the local communities, impacts on the environment, and the wisdom of considering design features that would facilitate the ultimate decommissioning of the nuclear facility.

Improvements in decommissioning techniques can be expected to occur and will occur. Witness the development and practical use of plasma arc cutting techniques and improvements in explosive techniques employed during the dismantlement of the Elk River Reactor and the Sodium Reactor Experiment. These techniques and others can be expected to be further improved. Improvements, in turn, will directly impact future decommissioning costs. Such changes are being followed with great interest by the power reactor owner-operator and by the NRC.

3.4 ONGOING EXPERIENCE

Radiation field buildup and subsequent operations personnel exposure is a recognized problem area that can impede operational maintenance and inspection and can impact the end-of-plant-life decommissioning operations. Efforts currently underway to reduce radiation levels buildup include methods for reduction of corrosion product formation in the reactor primary system, cost-effective primary system decontamination methods, more effective filter and purification systems, and modification to operational techniques that appear to have a direct influence on radiation fields. Industry involvement includes the gathering of available data to assess the overall extent and seriousness of the problem across the industry.(36)

Ongoing industrial activities impacting on exposure control and activated corrosion product reduction programs include:

- Decontamination operations at Dresden 1 (BWR, with steam generator)
- Surry and Turkey Point (PWR's) steam generators replacement programs
- Indian Point 1 (PWR) secondary side steam generator chemical decontamination

The latter two programs, when completed, will yield information that can have a significant bearing on decommissioning; e.g., effectiveness of chemical decontamination methods, steam generator removal technology, and exposure reduction techniques associated with these operations.

During reactor operations the radiation levels in many areas are controlled by radiation from the Reactor Coolant System and minimal efforts, if any, are made to keep surface contamination cleaned up. After 30 or 40 years of operation, these areas may have fairly high radiation levels. At Dresden 1, for example, it was learned that although chemical decontamination of the test loop was effective, considerable radiation levels were still present as surface contamination on floors and surrounding structures. This surface was quite high (1 R/hr radiation readings), but prior to decontamination it was not controlling. This phenomenon may well be encountered in PWR decommissioning and may have an effect on occupational exposures and on the volumes of waste for disposal.

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(36) S. G. Sawochka, N. P. Jacob, and W. L. Pearl, Primary System Shutdown Radiation Levels at Nuclear Power Generating Stations. EPRI 404-2, December 1975.

A DOE government program is establishing methods, costs, and priorities for the decommissioning of retired, contaminated DOE facilities at Hanford and at other DOE facilities.(37,38) Other Hanford companies have active programs to demonstrate the techniques for dismantling and consolidating contaminated equipment and facilities.(39)

Based on technical and economic evaluations of several decommissioning options, Safe Storage (mothballing) of the Peach Bottom Unit 1 under a Part 50 possession-only license was selected. The decommissioning of this reactor is nearing an end. However, in March 1975, implementation of the Peach Bottom End-of-Life Program, cosponsored by the U.S. DOE, formerly ERDA, and EPRI, was initiated. The prime objective of the program is to validate specific reactor design codes and predictions by comparison of actual predicted physics, thermal, fission product, and material behavior in Peach Bottom. It is concluded that such programs of end-of-life research, when appropriately coordinated with decommissioning activities, can significantly advance nuclear plant and fuel development technology.(40)

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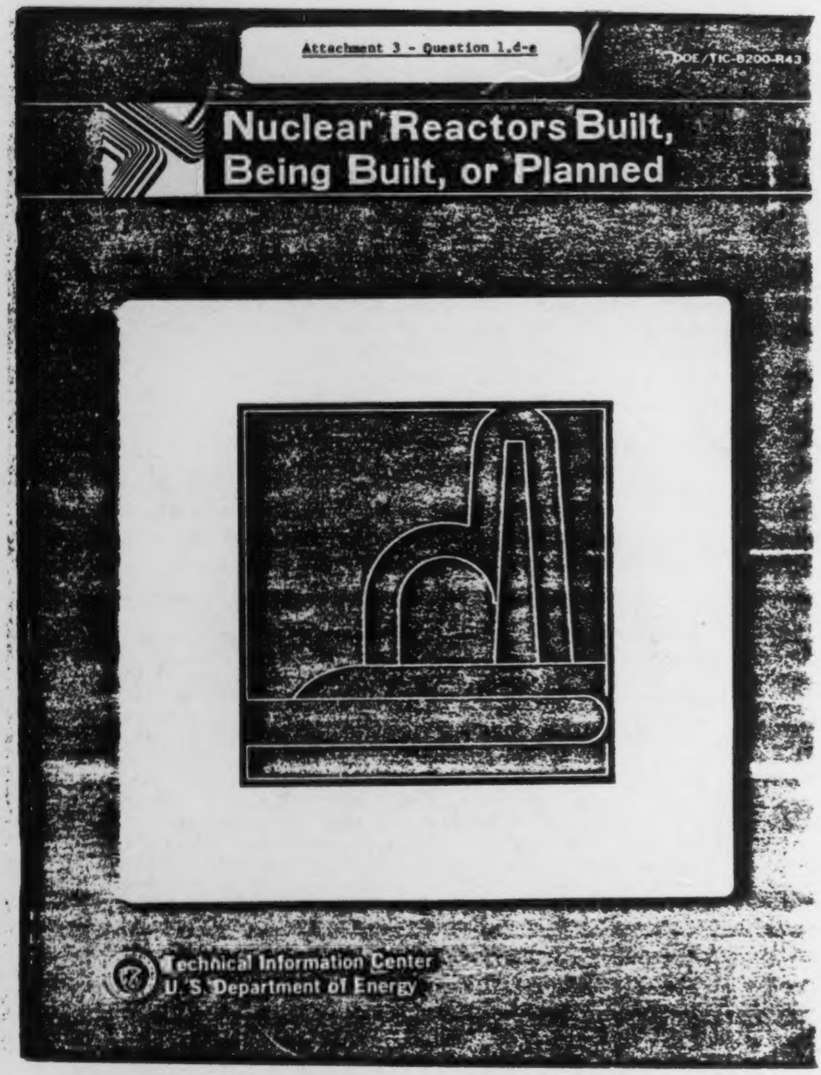


Attachment 3 - Question 1.d-e

DOE/TIC-8200-R43

Nuclear Reactors Built, Being Built, or Planned

Technical Information Center
U.S. Department of Energy

Attachment 4 - Question 1.d-e

Summary of DOE Decontamination Activities

An information summary of the U. S. Department of Energy (DOE) affiliated reactor decontamination projects and experiments resembling the Three Mile Island Nuclear Station condition is provided below.

The information is divided into three parts: 1) General Cleaning, 2) Reactor Vessel Sectioning, and 3) Cleaning Reactor Internals. Due to the time restriction for this report, only information well documented and on hand was included. A more comprehensible report could be presented within a larger time frame.

GENERAL CLEANING

Concrete Decontamination

Due to the large amounts of concrete in nuclear facilities, concrete decontamination options are numerous depending upon the initial conditions and the final acceptable limits. The following are summaries on actual decontamination projects and experiments.

Water Cannon, Concrete Spaller, and High-Pressure Water Jet - The Pacific Northwest Laboratory (PNL) is developing equipment that will rapidly and economically remove contaminated concrete surfaces while producing a minimal amount of contaminated rubble. Evaluation of various methods for removing concrete surfaces shows that many of the techniques presently used for decontamination require excessive manpower, time, or energy, or they remove more material than is necessary to clean the surface. Excess material removal increases the quanitity of waste that must be handled under controlled conditions. Three unique decontamination methods are being developed: the water cannon, the concrete spaller, and the high-pressure water jet. The water cannon fires a small, high-velocity jet of fluid to spall the concrete surface. The concrete spaller chips away the concrete by exerting radial pressure against the sides of a shallow cylindrical hole drilled into the concrete surface. The high-pressure water jet is a 50,000-psi spray that blasts away the concrete surface. Each method includes means for containing airborne contamination. Results of tests show that these techniques can rapidly and economically remove surfaces, leaving minimal rubble for controlled disposal.

Explosives - The use of explosives in the demolition of radioactive concrete at both the Elk River and Industrial Reactor Laboratories facilities has demonstrated the safe application of this technology. Some considerations in the use of explosives are blast produced dust, debris, toxic gas, vibration and air overpressures. These adverse blast effects can be minimized and controlled. Explosives use is the most rapid method of removing large concrete sections. They have a wide range of application, are adaptable for removing irregular surfaces and lend themselves to a remote method of operation.

Scarifier - For the past two years the Los Alamos Scientific Laboratory has been engaged in decontaminating its former plutonium facility. The facility was in use for over 30 years for plutonium operations varying from dry metalurgical processes to wet (solution) recovery processes. To date approximately 3400 square meters of floor surface have been decontaminated to permit re-use for nonplutonium work. Approximately 330 square meters of concrete surfaces required scarifying the contamination after all other attempts such as detergents and acid solutions had proven ineffective. Hand-held and floor type pneumatic scarifiers were developed as well as an inexpensive but effective contamination containment chamber built at Los Alamos for use with the hand-held model.

High-Pressure Aqua-Blaster, Water Jet, and Epoxy Paint - The irradiated fuel storage basin in the KW nuclear production reactor at the Hanford Site in Richland, Washington, was decontaminated and painted in preparation for converting the facility to storage of irradiated fuel from N Reactor. The storage basin is a concrete structure constructed with the top of the basin at ground level and extending 25 feet below ground level. When full of water, it holds 1.2 million gallons. Corrosion product, activation product, and some fission product build up was present in a layer of sludge about 3-inches deep on the basin floor. The solid waste was packaged in approved containers and buried. The concrete walls and pillars in the basin were decontaminated with a high-pressure aqua-blaster so there was no smearable contamination on the surfaces. Using a water jet, the sludge was flushed to a sump where it was picked up with a sludge pump and deposited in a crib which was formed in the basin. After decanting the excess water from the sludge, it was pumped to a large tank designed to meet the burial and transport regulations. The cement walls, floor, and columns were painted with an epoxy paint and released for conversion to storage of irradiated fuel from N Reactor.

Combination Decontamination Methods - Building 3019 at Oak Ridge National Laboratory was the first radiochemical processing pilot plant constructed in the United States. The seven heavily shielded, remotely operated cells have been decommissioned and refitted many times. This has resulted in numerous programs involving decontamination of the concrete interiors of the cells. The entire building was contaminated with plutonium to transferable alpha levels varying from 50 to 10^8 dis/min/100 cm² after a nonnuclear chemical explosion in 1959. Since plutonium oxide was deposited as an aerosol, extensive vacuuming was the initial step. Smooth concrete floors were decontaminated with a terrazzo machine while floors that were pitted due to chemical attack underwent decontamination by removing several centimeters with a jackhammer. A new concrete floor was poured over this and topped with a stainless steel cover. Decontamination of cell interiors involved using a high-pressure detergent solution on the surfaces followed by a high-pressure jet of water. Further plutonium removal was accomplished by using an HNO_3-NaF solution and a treatment supplied by Turco Products, Carson, California.

Mound Facility has effectively decontaminated and/or decommissioned four major facilities since 1949 and is currently in the process of partially decontaminating two more facilities.

Most of the current concrete decontamination work involves surfaces that are contaminated with plutonium-238. Although most of these surfaces are partially protected by a barrier (tile or paint), contaminated water and acid have penetrated these barriers. The initial cleaning of the floor involves standard water and detergent. Acids are not used in cleaning as they tend to drive the contamination deeper into the concrete surface. Next, the floor tile is manually removed inside a temporary enclosure under negative and filtered ventilation. Finally, layers of contaminated concrete are mechanically removed inside the ventilated enclosure. The suspected depth and surface area of contamination determines the type of mechanical tool used. In summary, several generic methods of concrete decontamination can be utilized:

Chemical -- water, detergent, acids, paint remover, strippable paint, etc.

Rotary -- sanders, grinders, scarifiers, etc.

Impact -- pressure washers (hydrolasers), particle blasters, scabblers, needlers, spallers, paving and rock breakers, ram hoes, etc.

Metallic and Nonmetallic Decontamination

Studies and actual decontamination of metallic and nonmetallic items are presented below.

Linear Shaped Charges - Linear shaped charges for nuclear decontamination application has been demonstrated at Hanford by the Pacific Northwest Laboratory (PNL). Linear shaped charges were used for sectioning a three inch diameter stainless steel pipe and for a stainless steel plate ten inches in diameter and 1/4 inch thick. Charges can be placed by hand or remotely with a manipulator and are useful in space limited areas. The charges have proven safe, reliable, time saving and reduce worker exposure.

Vibratory Finishing - Research conducted by the Pacific Northwest Laboratory (PNL) showed that vibratory finishing is a rapid and effective technique for removing plutonium and other radionuclide contamination from a variety of metallic and nonmetallic surfaces. Laboratory-scale studies showed that vibratory finishing can rapidly reduce the contamination level of transuranic-contaminated stainless steel and Plexiglas to well below the 10-nCi/g limit. For example, the plutonium contamination levels of steel tools and stainless steel glove-box panels and ventilation ducts have been reduced from greater than 4×10^5 dis/min·100 cm^2 to less than 10,000 dis/min·100 cm^2 in one hour of processing time. Other objects that were decontaminated by vibratory finishing include Plexiglas panels, glass tanks Neoprene gaskets, rubber gaskets, Hypalon gloves, polyvinyl chloride sheet plastic and vinyl bag-out bags.

In addition to the laboratory studies, the capability of vibratory finishing as a decontamination process was demonstrated on a large scale. The first decontamination demonstration was conducted at the Hanford N Reactor, where a vibratory finisher was installed to reduce personnel exposure during the summer outage. Items decontaminated included fuel spacers, process-tube end caps, process-tube inserts, pump parts, ball-channel inspection tools and miscellaneous hand tools. In other demonstrations, items that are being decontaminated include entire glove boxes, process-hood structural material and panels, process tanks, process-tank shields, pumps, valves and hand tools used during the decommissioning work. Vibratory finishing has great potential for both exposure reduction and volume reduction applications.

Electropolishing - Research conducted has shown that electropolishing is a rapid and effective technique for removing plutonium and other radionuclide contamination from a variety of metal surfaces. Electropolishing is an electrochemical process used in both laboratory and industrial applications to produce a smooth, polished surface on a variety of metals and alloys. The object to be decontaminated serves as the anode in an electrolytic cell. The passage of electric current results in the anodic dissolution of the surface material and, for proper operating conditions, a progressive smoothing of the surface. Any radioactive contamination on the surface or entrapped within surface imperfections is removed and released into the electrolyte by this surface dissolution process. The production of a polished surface also facilitates the removal of residual electrolyte by rinsing to leave a contamination-free surface. These research studies have demonstrated the ability of electropolishing to reduce the radiation levels of steel tools and stainless steel vacuum system components, which were heavily contaminated with plutonium oxide, from 1 million dis/min·100 cm^2 to background in less than 10 minutes. Other examples of objects that have been decontaminated within minutes using electropolishing include hot cell manipulator assemblies, analytical instrument components, laboratory tran fer containers, offsite shipping containers, fission product storage capsules, laboratory animal cages, and nuclear reactor process tube components. Electropolishing has great potential for exposure reduction applications because of its ability to rapidly remove beta and gamma surface contamination. Exposure reduction projects include the development of electropolishing techniques to facilitate contact maintenance on failed equipment, and the development of an electropolishing system for Hanford N Reactor to decontaminate valves, fuel spacers, process tube fittings, and other components for repair and reuse.

Contamination Stabilizing Coatings - Use of stabilizing coatings has been demonstrated by the Pacific Northwest Laboratory (PNL). A glove box was coated internally and externally for contamination control as well as the surrounding areas prior to removing it for decontamination. Of the three coatings tested both the Polybutyl Dispersion and Waterborne Vinyl applied by spraying or by squeegee were most effective for contamination control and ease of coating removal. The coatings saved time, money, radiation exposure, and there was no contamination spread.

N Reactor Technology - The N Reactor near Richland, Washington, presently utilizes the following techniques for clean-up of minor contamination of materials and tools. Many of these techniques have already been identifie but are presented here since they are routine and generally accepted.

- High-Pressure Water
- Acid and Detergent Rinsing
- Ultrosonic Decontamination
- Vibratory Finishing
- Electropolishing

REACTOR VESSEL SECTIONING

This section is limited to the actual cutting of the reactor vessel and its internals.

Elk River Reactor - Decontamination removal of the 58 MW reactor and contaminated surroundings was accomplished by an underwater, remotely operated plasma cutting torch. The pressure vessel internals, the pressure vessel and the outer thermal shield were disassembled by the plasma torch and explosives were used to remove the biological shield.

Reactor Vessel Sectioning Demonstration - A demonstration presented by the Pacific Northwest Laboratory (PNL) involved the use of an air-arc gouger and an oxy-fuel cutter to cut through a 1/4 inch stainless steel plate overlaying a nine inch carbon steel block. The demonstration was successful and provided a clean cut.

CLEANING REACTOR INTERNALS

This section is also limited to a few items that summarize an actual routine maintenance and a highly successful deomstration.

N Reactor Annual Acid Cleaning - During the annual outage inhibited phosphoric acid is injected along with demineralized water to a single part of the primary system, circulated, and then deposited to a waste system. During this time CO60 in the carbon steel system is reduced, lowering the dose rates of associated piping and equipment.

In Situ Electropolishing Demonstration - The Pacific Northwest Laboratory (PNL) demonstrated electropolishing techniques on a 5,000 gallon primary coolant tank extensively contaminated with CO60. Normally accomplished by hand, the decontamination takes four weeks. Electropolishing the tank from 20 mrem/hour to background was done in five hours.

Remotely, 85% of the task was completed by a large swab continuously pumping out electrolyte. A magnetic coupling controlled the swab from the outside of the tank. The remaining clean-up was performed by workers inside the tank on hard-to-reach areas. Besides reduced time and worker exposure, there is minimal secondary waste. Only 55 gallons of electrolyte, which is reusable, was needed to decontaminate the 5,000 gallon tank.

Question 1.f:

Can the Department obtain from its own facilities the same type of information it hopes to obtain from the R&D program at TMI? Please explain.

Answer:

The Department cannot obtain the same type of information from its own facilities that it hopes to obtain from the R&D program at TMI. The Loss of Fluid Test Facility, the largest and most comprehensive Federal facility for conducting research on water reactor accidents, cannot provide information on response of commercial powerplant instruments and equipment to accident conditions, on performance of a large commercial reactor design under severely degraded core cooling conditions, on transport and deposition of fission products released from a damaged reactor core, or performance of containment systems during accidents, or the mechanisms and characteristics of hydrogen release, deflagration and damage effects during degraded core accidents, on the technology for collecting, packaging, concentrating, treating and disposing of the abnormal radioactive wastes resulting from such accidents, etc. Because LOFT can take a fuel assembly to the edge of physical damage, it cannot obtain information beyond limited fuel damage. It is also limited to a partial core as compared to a commercial powerplant and it cannot handle gross contamination of the plant.

Question 2:

What is the minimum amount that would have to be spent to ensure adequate progress in cleaning up TMI?

Answer:

The Department has not made its own estimate of the cost of cleanup. However, GPU has estimated that it will cost $760 million to complete cleanup of TMI.

Question 3:

Please provide the Department's position on the extent of its responsibility for disposing of the damaged reactor core from TMI. If the Department believes it has this responsibility, how and where does it intend to process and dispose of the core?

Answer:

The Department does not, at this time, have plans to dispose of the damaged TMI core. Present plans are for the Department to ship selected portions of the core off-site for further R&D examinations. The remainder of the core will be stored in the reactor spent fuel storage pool in appropriate containers.

Question 4:

Please provide your estimate of the total cost for restoring the TMI Unit-2 reactor to service.

Answer:

The Department has not estimated the cost for restoring TMI-2 to service. Since the condition of the core and reactor vessel is unknown at this time, and the requalification requirements for plant components are also unknown at this time, any estimate of restoration costs made at this time would be largely conjectural.

Question 5:

Should the manufacturers and vendors of nuclear powerplant equipment and components share the cost of cleaning up TMI? Why or why not?

Answer:

The extent to which the responsibility for cleanup is shared with the suppliers of the equipment is currently under litigation. The Department has no comment with respect to this litigation.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

NOV 4 1981

The Honorable James A. McClure, Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

We are pleased to submit responses to additional questions for the record from the October 20, 1981 hearing on TMI-2 cleanup. I hope you will find these responses adequate for your purposes, but if you need additional information or clarification, please let me know.

Sincerely,

Nunzio J. Palladino

Enclosure:
Responses to Questions on
TMI-2 Cleanup

cc: The Honorable Henry M. Jackson

FINANCIAL

QUESTION 1. Identify the source and magnitude of the funds used to date to clean up the TMI site.

ANSWER.

GPU's three operating companies are using the proceeds from their property insurance coverage to pay for cleanup costs. As of mid-October 1981, almost $217 million of the licensees' $300 million in property insurance coverage had been expended for cleanup. The licensees' insurers have indicated that approximately $15 million more will be paid out by the end of November 1981.

QUESTION 2. What are your estimates of the schedule for completion of the cleanup of the TMI site, and the cost of meeting that schedule?

ANSWER.

NRC has not made an independent estimate of the costs or schedule.

Presently, the licensee's schedule indicates that fuel removal from the reactor will be completed by mid-1984 followed by the decontamination and/or removal of the reactor coolant system to be completed by mid-1985 to early 1986. Some manual decontamination of the reactor building and equipment, together with the processing of decontamination liquids will probably occur simultaneously during this period. By late 1985 or early 1986 the TMI-2 facility should be decontaminated to the point where either decommissioning or refurbishment will be the next step.

This schedule, the licensee's most recent estimate, is based on the assumption that cleanup funding will be available without restriction beginning in January 1982. The licensee's estimate of required funding for the entire cleanup is $1,034 million.

QUESTION 3. What will be the impact on these estimates of the failure to resolve promptly the financial uncertainties?

ANSWER.

As noted in our response to Question 2, the licensee's estimate for completing the cleanup in late 1985 or early 1986 is based on the assumption that GPU's financial uncertainties are solved by January 1982. We would expect the licensee's estimated schedule to slip if financial assurance is delayed.

QUESTION 4. Given the experience of the TMI accident, what is an appropriate level of property insurance coverage?

ANSWER.

If a TMI-2-type accident occurs at another reactor, property insurance coverage of $1 billion may be adequate to provide funds for cleaning up the reactor site. However, any estimate of cost should recognize the inherent uncertainties and thus such an estimate may be on the low side. If a more serious accident were to occur--such as, for example, a complete core meltdown--we expect that there could be substantially larger cleanup costs.

QUESTION 5. What actions have been taken, or should be taken, to ensure that that amount of protection is available in the event of a future accident?

ANSWER.

On August 18, 1981, the Federal Register published the Commission's proposed rulemaking to amend its financial qualifications regulations contained in 10 CFR Part 50. As part of that action, the Commission proposed requiring power reactor licensees to maintain the maximum amount of commercially available on-site property damage insurance, or an equivalent amount of protection. Insurance currently available now totals $450 million, although the nuclear insurance pools are attempting to increase aggregate policy limits to narrow the gap between available insurance coverage and potential cleanup expense. We are optimistic that about $1 billion can be made available by early next year through private insurance and utility payment of retrospective premiums.

As we have indicated in our testimony, if this amount cannot be established--perhaps because of a reluctance of utilities to pledge the necessary retrospective premiums--the Commission would support a program of mandatory payment of premiums. If necessary, the Commission would seek legislative changes to mandate the availability and purchase of such insurance.

Furthermore, it is not certain that private sources of insurance will be available to cover cleanup costs much larger than those arising from the TMI accident. Consequently, we view recent legislation proposed by Senator Heinz and others as a means of complementing NRC's actions to afford protection of public health and safety and minimize danger to life and/or property.

QUESTION 6. Summarize NRC's involvement in the TMI-2 cleanup.

ANSWER:

The NRC's primary involvement in the TMI-2 cleanup is to provide the regulatory oversight necessary to ensure that the cleanup is performed in a manner which will not endanger the health and safety of the public and to ensure that the environmental impacts associated with performing the cleanup are minimized. To accomplish these functions, the Three Mile Island Program Office (TMIPO) was established within NRR in April 1980. The TMIPO Program Director has overall responsibility for directing the NRC's activities associated with the cleanup operations. The TMIPO Deputy Program Director, stationed at the NRC's Middletown office, provides direct supervision of the NRC personnel at the TMI site. Activities performed by the TMIPO include:

1. Review and approval of proposed changes to the TMI-2 Facility Operating License.
2. Preparation of safety and environmental evaluations for proposed facility modifications and proposed cleanup operations.
3. Review and approval of licensee prepared procedures for recovery and cleanup operations.
4. Resident inspection functions of the licensee's operations.

As an additional involvement in the TMI-2 cleanup, the NRC is a participant in the four party (NRC, Department of Energy, Electric Power Research Institute, and General Public Utilities) coordination agreement which was established in March 1980 to maximize the effectiveness of post-accident examinations of TMI-2 to obtain valuable information related to reactor plant safety, reliability, regulation, and operation. This coordinated effort is planned to continue throughout the cleanup.

QUESTION 7. Identify the major R&D benefits obtained to date, and the potential R&D benefits resulting from the cleanup.

ANSWER.

An extensive post accident research program has been developed wherein NRC, DOE, EPRI, and GPU are cooperating, in accord with a negotiated joint agreement, to maximize the recovery of useful data during cleanup activities. Detailed plans have been initiated in the following areas and some significant results have already been obtained as outlined further below:

R&D Task Areas

1.0 Instrumentation and Electrical Equipment Suvivability

2.0 Radiation and Environment

  2.1 Fission Product Transport, Deposition and Environmental Description

  2.2 Decontamination/Radiation Dose Reduction Technology

  2.3 Early Containment Penetration and Monitoring

3.0 Radioactive Waste Handling

4.0 Physical Plant Examination

5.0 Data Integration

  5.1 Establish Data Bank

  5.2 Establish Technical Integrator

  5.3 Archive Sample Repository

6.0 Mechanical and Structural Components

  6.1 Primary System Pressure Boundary Characterization

  6.2 Mechanical Components

7.0 Reactor Core and Fuel

  7.1 Criticality Control Study

  7.2 Core Damage Assessment and Removal

  7.3 Packaging, Shipping, Disposal of Fuel

  7.4 Fuel Experiments and Examination

A formalized reporting procedure has been developed for completed work which is coordinated by a DOE contractor at TMI. To date more than 30 reports have been issued with the results of most significant benefit outlined as follows:

1. There is indication that fission products such as iodine that were released from the damaged fuel were dissolved in the primary system water. Careful evaluation of the phenomenon will help in defining the radiological source term for future assessment of possible public health and safety issues.

2. Evaluation is being made of the evidence of the extent and effects of the in-containment hydrogen burn and its effect on some equipment. The results are useful in setting NRC containment and associated equipment safety criteria and in anticipating critical equipment survivability under hydrogen fire conditions.

3. Decontamination experiments, rad-water cleanups, and the development of containment sump water processing methods have provided NRC with benchmark data and experience for decontamination/decommissioning regulation.

4. During processing of TMI-2 sump water information is being obtained on type of entrained materials which could in some future plant accident interfere with residual heat removal system operation, for example, clogging pump intakes.

5. Several instruments have been removed from within the containment and the affects of the accident on their operability are being assessed to develop new or revised criteria for in-containment safety-class equipment.

6. New procedures have been developed and approved by NRC for environmentally safe methods of encasing and shipping large high activity waste containers.

Most of the benefit from the TMI-2 R&D efforts are still forthcoming. Over the next few years the containment gross decontamination will be completed, the initial core damage assessment will be completed and the detailed examination of the damaged fuel will begin. In particular NRC can benefit greatly at relatively low cost from this very expensive accident in its development of safety and licensing criteria from continued evaluation of the following situations:

a. The condition of the damaged fuel and evaluations of the design and damage effects on degraded core coolability. This information will be of significant input to criteria on prevention of multiple failure accidents from proceeding to core melting.

b. Further analysis of electrical and instrumentation equipment survivability under the accident conditions and detailed evaluation of mechanical component degredation during and after the accident. These data will provide improved guidance for NRC safety criteria and qualification for new and existing plants. New criteria are being developed for plant equipment requalification after accidents.

c. Continued evaluation of the problems and successful routes to resolution for the remaining decontamination and waste disposal will provide NRC with valuable benchmark data and experience to respond to any future accident and decontamination conditions.

QUESTION 8. Discuss the degree of foreign interest in joint financial participation in the cleanup.

ANSWER.

There appears to be no foreign interest in joint financial participation in the cleanup. In November 1980 an international seminar, hosted by GPU, EPRI, NRC and DOE, was held to invite foreign financial participation in the cleanup. Although reasonably well attended this seminar has not resulted in willingness on the part of other countries to fund portions of the cleanup or related research. Several foreign nationals, however, have worked on TMI cleanup activities while on temporary assignments with GPU and the NRC.

QUESTION 9. What is the anticipated schedule for the restart of TMI-1, and what would be the effect of the restart of GPU's financial condition?

ANSWER.

The schedule for TMI-1 restart depends on two factors: 1) when the plant can physically be ready for restart and 2) when the Commission decides whether to lift the suspension of GPU's license to operate TMI-1 based on the outcome of the restart proceeding. It is estimated that Unit 1 can be physically ready to restart by late December 1981 or early January 1982. With respect to the Commission's decision, it is expected that the Atomic Safety and Licensing Board (ASLB) will provide their initial decision on the remaining issues in the restart proceeding to the Commission in early November 1981. (The ASLB issued a partial initial decision on management competence in August 1981.) If the ASLB decision is favorable to restart, the Commission could decide by December. However, it should be noted that the restart proceeding has been reopened based on cheating during the NRC operator license exams and it is expected that this proceeding could continue for several months. It has not yet been decided by the Commission whether restart of the facility could be permitted prior to the completion of the reopened hearing.

With respect to the effect of TMI-1 restart on GPU's financial conditions, we are informed by GPU that allowing recovery of all TMI-1 capital and operating costs would substantially improve the financial position of GPU and its operating subsidiaries, by both boosting cash flow and earnings and reducing purchased power energy costs. However, the ability to apply operating revenues to the TMI-2 cleanup remains uncertain.

QUESTION 10. What is the status of the various pending regulatory decisions relating to the TMI cleanup process?

ANSWER.

There are currently no pending major licensing actions relating to the cleanup. The last pending regulatory issue of major significance, NRC approval to operate the Submerged Demineralizer System (SDS) for processing water from the reactor building, was completed June 18, 1981. After completion of construction, system testing and operator training the licensee began processing of reactor building water on September 22, 1981.

On a more routine basis, regulatory reviews of hundreds of more limited licensee activities (generally of a procedure-related nature) have been and are being conducted by the NRC staff located onsite. These reviews, which typically include procedures for assuring that worker radiation exposures will be minimized, are normally completed within a few working days.

QUESTION 11. If a resolution of the TMI financial issue is reached, is the NRC prepared to move forward expeditiously in granting the necessary approvals?

ANSWER.

Yes, if they meet NRC's health and safety standards. To assure this the NRC maintains TMI dedicated professional staffs at both headquarters and the TMI site. Our intent is to conduct our required regulatory reviews quickly and in conformance with our prime responsibility to protect public health and safety. Since the Commission will continue to give TMI cleanup-related issues a high agency priority, we are confident that NRC regulatory actions will not act as an impediment to completing the cleanup.

PUBLIC HEALTH AND SAFETY

QUESTION 1. What are the possible failure modes that could result in the release of the mobile fission product fraction to the environment? What probabilities are associated with these failure modes? How do these probabilities change with time?

ANSWER.

The loss of containment integrity would result in the migration of the contained radioactivity in the containment sump to the environment (the Susquehanna River). The failure of an outside processed water storage tank would also result in the transport of a small amount of radioactivity to the river. The following accidents would result in the release of gaseous radionuclides to the environment: (1) failure of a ventilation system filter during cleanup operations, (2) contaminated material fire, and (3) breach of a radioactive solid waste containing package.

The probabilities of these failure modes have not been determined, but all are considered to be very low probablity events. However, the probablity of any such event increases with time, thus the likelihood of some uncontrolled release of radiation to the environment becomes larger as the cleanup period becomes longer.

QUESTION 2. What are the potential environmental consequences associated with an additional delay in the cleanup of TMI?

ANSWER.

Any additional delays in cleaning up TMI would increase the existing small potential for radiation releases to the environment. As time passes the possibility of radiation releases associated with the types of accident scenarios described in our answer to Question 1 will increase.

Additionally TMI-2 cleanup delays would result in increased occupational exposure to the onsite workforce. These exposure increases would be caused by the continuing need to perform plant maintenance functions in contaminated areas during an extended cleanup period. Maintenance activities will need to be performed periodically to prevent degradation of plant safety systems, especially prior to fuel removal.

QUESTION 3. What are the expected environmental effects of the cleanup?

ANSWER.

The most significant environmental impact associated with the cleanup will result from the radiation doses received by the entire work force (estimated to be in the thousands) from cleanup activities. These doses are estimated to be in the range of from 2000 to 8000 person-rem.

The NRC staff has estimated that less than one additional cancer death attributable to exposure to radiation will occur among the entire work force engaged in cleaning up TMI-2. (The death rate from cancer among the U.S. population averages approximately 200 deaths per 1000 people.) Not more than two additional genetic defects are expected in descendents of exposed workers. (Among the U.S. population, approximately 60 genetic defects can be expected per 1000 people.)

EDISON ELECTRIC INSTITUTE

RESPONSES TO QUESTIONS SUBMITTED

BY

COMMITTEE ON ENERGY AND NATURAL RESOURCES

AND THE

SUBCOMMITTEE ON NUCLEAR REGULATION
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

U.S. SENATE

OCTOBER 20, 1981

It would appear that the expeditious cleanup of the Three Mile Island site is in everyone's best interest. Do you believe that a prompt resolution of the financial uncertainties regarding the TMI cleanup is an essential first step in solving the cleanup problem? Please explain.

RESPONSE: Yes, the resolution of the financial uncertainties is an essential first step in proceeding with the cleanup of TMI-2. GPU is financially unable to independently arrange for the necessary funds to achieve the cleanup and GPU's future solvency is adversely impacted by the lack of a resolution to the TMI-2 cleanup issue. This situation adversely affects the financial standing of all utilities, particularly those with nuclear programs in addition to the adverse effect on GPU.

An equitable arrangement must be achieved to provide sufficient funds to assure a safe cleanup operation before the cleanup can proceed in earnest.

What is your view of the Federal, State, and ratepayer role and responsibility to the cleanup?

RESPONSE: The Institute concurs with Governor Thornburgh and the General Accounting Office in that the cleanup costs should be shared by many parties, namely, the ratepayers of GPU, the States of Pennsylvania and New Jersey, the Federal Government and the electric utility industry. The cost apportionment proposed by Governor Thornburgh on the current cost of the cleanup of TMI-2 is appropriate.

The apportionment appears to be based on an equitable distribution over the several areas and organizations that have benefited from nuclear power and the lessons learned from the accident.

-- GPU ratepayers and the States of Pennsylvania and New Jersey have received benefits from the GPU nuclear program that includes the lower cost of production of electricity by the Oyster Creek and the Three Mile Island I nuclear power plants and therefore they should pay for a significant portion of the cleanup.

-- The Federal Government initiated the nuclear power program in the country as a necessary domestic energy resource and convinced the utilities to proceed with commercial nuclear programs. Furthermore, there is significant safety R&D information that has been received from the accident and more will be obtained throughout the decontamination operation. The national gain in knowledge on future safety aspects of nuclear power will be to the benefit of all citizens of the country, supporting the participation of the Federal Government.

-- The EEI Board of Directors has concluded that it is in the best interest of the electric utility industry to participate financially in the cleanup of TMI-2. The Board has recommended a six-year participation totaling $192 million for the total electric utility industry.

What is the possibility of a GPU bankruptcy, and what would be the impacts on:

(a) the cost and reliability of continued service to GPU's customers;

(b) the cleanup operation at the TMI site; and

(c) the financial health of the electric utility industry?

RESPONSE: The Edison Electric Institute does not feel qualified to comment on the possibility of a GPU bankruptcy or the impact of such an action on the cost and reliability of continued service to GPU's customers. GPU is more qualified to comment on the latter and the financial community on the former.

A bankruptcy would, of course, have a significant adverse impact on the cleanup operation. The legal ramifications of establishing responsibility for the cleanup would be one of several entanglements that would result from the bankruptcy. The cleanup operations would be delayed with a consequent increase in the cost of the operation.

GPU bankruptcy would also have a significant adverse impact on the financial health of the electric utility industry. The financial standing of all utilities, particularly nuclear utilities, would be adversely affected. This, in turn, would result in higher money costs which would not only impact adversely on nuclear power programs but also upon other utility capital requirements and thus ultimately raise the cost of electric service to consumers.

How do the rates that currently charged to GPU customers compare with those paid by customers of other electric utilities within Pennsylvania, and within other National Electric Reliability Council areas?

Compare the rate of increase of the rates charged to GPU customers from the March, 1979 accident to present with the increase in rates to:

- other electric utility customers within the state, and
- customers in other National Electric Reliability Council areas.

RESPONSE: See Attached Table I

What will be the impact on these estimates (schedule and cost) of the failure to resolve promptly the financial uncertainties?

RESPONSE: The cleanup schedule and cost estimates are based on having sufficient funds available on a timely basis. If the funds are not readily available on a timely and dependable basis, the time required to achieve the cleanup cost will be lengthened and the cost undoubtedly would be increased. Any delay in a specific activity will result in a higher cost because of the impact of inflation with time. Financial certainty is a primary ingredient to the achievement of the estimates schedule and cost.

Given the experience of the TMI accident, what is an appropriate level of property insurance coverage?

RESPONSE: In establishing an appropriate level of property insurance coverage the most important need is to assure public health and safety. Based on the experience of TMI, coverage of $1 billion is a proper immediate objective to assure public health and safety. In addition, there ought to be continued increases in property coverage to keep pace with inflation and to provide additional security to the utility corporation so that it can continue to render service to the public in the event of an accident.

The Excess Property Insurance Program initiated by the Edison Electric Institute is designed to meet these objectives.

What actions have been taken, or should be taken, to ensure that that amount of protection is available in the event of a future accident?

RESPONSE: There are two sources of basic property insurance, Nuclear Mutual Limited (NML) and American Nuclear Insurers (ANI). As of August 1, 1981, NML raised its policy coverage to $450 million and ANI is expected to raise its limit to $450 million by January 1, 1982. These basic policies plus the Excess

Property Insurance Program, being offered by Nuclear Electric Insurance Limited, will build to about $1 billion of available property insurance. This is expected to grow to higher coverage in the future. As a matter of prudent judgment, utility management will carry all the property insurance generally available on reasonable terms and investor-owned utilities have been doing so, although there has been some variation in coverage because of the differences in offerings in different markets.

The desire of investor-owned utilities to enlarge insurance protection is evident from the NEIL Excess Property Insurance Program. Furthermore, corporate mortgages generally require the corporation to take out as much property insurance as is customary in the industry. There is at least a question, therefore, of whether any additional actions beyond the insurance program of the electric utility industry are necessary to assure that the amount of protection at an appropriate level is available in the event of a future accident. The electric utility industry, however, has no objections to imposing requirements to purchase appropriate amounts of insurance available on reasonable terms but such requirements should be flexible enough to avoid compelling purchases from a particular carrier or disrupting established insurance market.

Summarize your group (agency) involvement in the TMI-2 cleanup.

RESPONSE: The Edison Electric Institute has been involved in analyzing the cleanup issue and preparing recommendations to the utility industry that will assist in the TMI-2 cleanup. The EEI Board of Directors has recommended that the total electric utility industry should contribute $32 million each year for six years. The allocation is recommended on the basis of: (1) $16 million a year to be provided by the electric utility industry as a whole, and (2) $16 million a year to be provided as a surcharge, per MWE capacity of nuclear power plants, by electric utilities with operating licenses or construction permits issued by the Nuclear Regulatory Commission.

Identify the major R&D benefits obtained to date, and the potential R&D benefits resulting from the cleanup.

RESPONSE: Knowledge gained from the accident at TMI-2 has been substantial. This knowledge is beneficial from an R&D standpoint as well as for Federal regulatory activities and plant operations. The R&D benefits are of great value to Federal activities and industrial programs. The very detailed analysis of the accident provided a much better understanding of systems interactions, equipment reliability and human factors considerations. This understanding has been translated into system and equipment improvements at all operating plants and in plants under construction.

Control room instrumentation has been upgraded to assist the operators in diagnosing unusual operating situations, operating procedures improved, operator training increased and communication capability expanded to assist in responding to emergencies. Also, emergency planning has been improved with detailed procedures and greater cooperation achieved with surrounding localities.

There is much more to be learned during the TMI-2 cleanup phase which will be of benefit to the Federal Government and to the industry. Basic scientific data will be obtained during the cleanup activities that should help to reduce the probability of future accidents. The cleanup experience will be beneficial to assist in planning the decommissioning of nuclear plants when they reach the end of life and will reduce time dependent costs of any future accidents.

The engineering to be performed in the TMI-2 cleanup is directly applicable to the design of equipment and/or components which will improve the safety and reliability of future nuclear power plants and recovery equipment in the event of a future accident involving core degradation. The removal, examination and encapsulation of the TMI-2 core will provide substantial knowledge on the effects on fuel material of the lack of coolant protection and the means of preparing fuel material for disposal.

Decontamination techniques must be developed, applied and modified to perform the major task of decontaminating the containment building and all of the equipment within the building. These techniques will be useful throughout the nuclear industry to achieve lower radiation levels with operating plants and minimize the overall radiation exposure of nuclear workers.

Discuss the degree of foreign interest in joint financial participation in the cleanup.

RESPONSE: The Institute is not aware of any current foreign interest in financial participation in the TMI cleanup. The interest of foreign utilities to participate in the lessons learned from the TMI accident, however, is apparent. Several foreign utilities are financially supporting the Nuclear Safety Analysis Center (NSAC), which was formed to analyze the TMI accident and to provide greater analytical resources to the utility industry in designing and operating nuclear power units. Foreign utilities also have shown an interest in the Institute for Nuclear Power Operations (INPO), which was formed to establish benchmarks.

Given this interest on the part of foreign utilities, the Institute believes it would be appropriate to approach these utilities regarding their financial participation in the cleanup after the "cost-sharing" principle is implemented to a higher degree.

* * * * * * * * * * *

10/16/8

TABLE I

REVENUE COMPARISIONS

COMPANY	AVERAGE REVENUE PER kwhr SOLD (cents per kwhr)	
	1979	1980
Metropolitan Edison (GPU)	4.13	5.47
Duquesne Light Co.	4.55	5.02
Philadelphia Electric Co.	4.71	6.33
Penn Power Co.	4.07	4.42
Pennsylvania Electric Co. (GPU)	4.38	4.66
Pennsylvania Power & Light Co.	3.79	3.90
West Penn Power Co.	3.13	3.29
Reliability Councils		
MAIN Central Illinois Public Service Co.	4.44	4.96
MARCA Interstate Power Co.	4.17	4.50
NPCC Boston Edison Co.	6.11	7.70
WSCC El Paso Electric Co.	4.70	5.60

RESPONSES OF GENERAL PUBLIC UTILITIES CORPORATION

Appendix K

HEARING BEFORE THE UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
AND SUBCOMMITTEE ON NUCLEAR REGULATION
OCTOBER 20, 1981

Responses to Questions Attached to Senators
Simpson's and McClure's letter Dated October 13, 1981

Question:

1. It would appear that the expeditious cleanup of the Three Mile Island site is in everyone's best interest. Do you believe that a prompt resolution of the financial uncertainties regarding the TMI cleanup is an essential first step in solving the cleanup problem? Please explain.

Response:

Yes. Because of the absence of a funding program, efforts now underway at TMI accomplish little more than the maintenance of the status quo. While progress has been made over the past two years in reducing the potential threat to health and safety which exists at TMI, the major part of the job still lies ahead. In the absence of a resolution of the financial uncertainties surrounding funding, GPU cannot complete the next major milestone in the cleanup--the removal of the damaged core.

K-2

Question:

2. What is your view of the Federal, State, and ratepayer role and responsiblity to the cleanup?

Response:

The federal government, the governments of the Commonwealth of Pennsylvania and the State of New Jersey, and their regulatory commissions each have a responsiblity for several aspects of the events preceding and following the accident. After the magnitude of anticipated costs became known, a fundamental impasse developed among the affected parties, such that they were unable to fully carry out their respective responsibilities. Thus the development of a cost sharing agreement for cleanup funding, in which each of the involved participants carries an equitable share of the cleanup cost (as perceived by the other participants) is essential. The efforts to achieve a cost sharing solution pursued by Governor Thornburgh and Senator Heinz are extremely constructive and go a long way towards identifying the participants and obtaining agreement on equitable shares. The only formula which breaks the TMI funding impasse is the formula that is acknowledged as acceptable by all participants. It is important that the process of finalizing the solution continues, so that the cleanup can proceed expeditiously. The responsibility of each of the participants in the cleanup impasse is relatively clear. These responsibilities and the manner in which they are acknowledged are important determinants in the development of an acceptable funding program. The self interest of each of the affected parties is another significant factor in the development of such a program. The responsiblities of the key participants in the cleanup are discussed below.

The Federal Government: The federal government has a direct responsibility in dealing with the unanticipated costs of TMI since it has been a major participant in the development of nuclear power. The federal government also has a direct responsibility as the preemptive regulator of nuclear power to share in dealing with the unanticipated costs attributable, at least in part, to deficiencies in the discharge of its regulatory responsibilities. The probable cost to the nation of failing to put in place an equitable shared solution of the TMI cleanup funding is many times that likely to be experienced with such participation. Finally, there can be no certainty that, in the absence of a shared solution, the whole of the financial burden of providing cleanup funding will not fall upon the federal government. There is an opportunity now to put in place a rational and equitable program to share cleanup costs on a basis that places only a relatively minor burden on the federal government. The federal government has a responsibility to assure that that opportunity is not lost.

State Governments and the Rate Payers: The lack of progress on the cleanup allows a potential threat to the health and safety of Pennsylvania residents to persist. The Commonwealth of Pennsylvania has an implicit responsibility to assist in the development of a program to remove that threat. Beyond that, the governments of the Commonwealth of Pennsylvania and the State of New Jersey have the responsibility to provide an environment where the economics and quality of life of their respective states can flourish. An essential ingredient developing that environment is the reliable and economies supply of electricity. Without resolution of the cleanup impasse, the GPU operating Companies in both states will be unable to assure the continuation of such energy supply. Moreover, GPU customers in both states have benefitted from past economies of nuclear energy. State governments, through their rate regulatory agencies, have a responsibility to assure that utility customers contribute the costs associated with unanticipated problems of nuclear technology.

National Utility Industry: The national utility industry has a high degree of self interest in the resolution of the TMI funding impasse. This self interest is related to the cost and availability of financing for the utility industry. Utility security analysts have indicated that this funding impasse has introduced a significant "risk premium" associated with these financings. The resolution of this problem should result in a reduction or elimination of that premium. The utility industry has recognized its self interest in an expeditious cleanup of TMI-2, and has determined that it should have a role in that effort.

Question:

3. Thus far, how have the costs of cleaning up the TMI site been allocated?

Response:

The allocation of TMI-2 cleanup costs can be viewed in several ways: (1) Allocation in an accounting sense; (2) allocation among the GPU subsidiary operating companies; (3) allocation in terms of financing the costs to date; (4) allocation among the various activities that have taken place at TMI-2. Each of these cost allocation categories is discussed below.

All of GPU's expenditures at TMI-2 since the accident can be classified either as operation and maintenance (O&M) expenses or as deferred cleanup costs. O&M includes activities required for compliance with the plant's technical specifications and many support activities that are common to any nuclear facility, such as security, quality assurance, and administrative functions. Normal O&M costs are being treated, for accounting purposes, as current expenses. Deferred cleanup costs include additional activities required to maintain the plant in a safe shutdown condition, to perform cleanup and decontamination of the plant site, and to comply with specific NRC requirements arising out of the accident. All cleanup costs are being treated, for accounting purposes, as deferred costs, i.e., they are accounted for on the balance sheet as deferred debits. The costs through August 1981 in each of these categories are shown in Table 3-1.

TABLE 3-1

TMI-2 COSTS ($MILLIONS THROUGH 8/31/81)

	1979	1980	1981	TOTAL
Normal O&M	$14.0	$11.6	$10.8	$ 36.4
Deferred Cleanup	$94.5	$86.6	$24.0	$205.1

The TMI Nuclear Generating Station is owned by Metropolitan Edison Company (Met-Ed), Pennsylvania Electric Company (Penelec) and Jersey Central Power & Light Company (Jersey Central) as tenants in common. The companies' undivided interests are 50 percent in the case of Met-Ed and 25 percent in the case of Penelec and Jersey Central. Met-Ed is the operating company for TMI-1 and TMI-2. All net TMI-2 costs, except for interest on unfunded deferred costs, have been apportioned among the subsidiaries in accordance with the 50%/25%/25% ownership. Interest costs on unfunded deferred expenditures reflect each company's cash flow situations.

Allocation in terms of financing the costs is addressed in the responses to Questions 4 and 11.

Question:

4. How has such allocation affected the ability of GPU to move forward with the cleanup, and how has the allocation affected the financial health of GPU?

Response:

The accounting allocation and the allocation in terms of the sources of financing have affected the financial health of GPU. Essentially all of the deferred TMI-2 cleanup costs have been paid by the insurers. Normal TMI-2 O&M expenses are being borne by the shareholders. None of the costs incurred at TMI-2 are being recovered from ratepayers. This cost allocation has resulted in reduced earnings for GPU.

However, the major factors that have adversely impacted the financial health of the GPU companies have been the ratemaking decisions in Pennsylvania and New Jersey that specifically excluded from the rates paid by our customers any allowance for the operating expenses and the capital costs associated with both TMI-1 and TMI-2. Additionally, because construction had to be suspended at JCP&L's Forked River nuclear plant, the capital associated with that investment is no longer earning a return. The result of those actions is that a substantial portion of GPU's investor supplied capital is not earning any return as illustrated by Table 4-1 that follows. This table shows that of GPU's total net investment in plant of $4.4 billion as of the end of 1980, about $1.5 billion (nearly 35%), was not earning a return.

Most utilities are financially strong enough to withstand a small percentage of their capital not earning a return. But the levels displayed in the previous table are unprecedented in the utility industry. While that capital has been excluded from ratemaking, it still exists in a physical and financial sense. It still must be serviced. Additionally, significant O&M expenses associated with TMI-1 and TMI-2 continue, even though ratemaking has not provided revenues for them. (In April 1981, however, the Pennsylvania Utility Commission (PaPUC) did allow revenues for ATMI-1 restart-related costs aggregating about $16 million annually for Met-Ed and Penelec.)

The overall effect of these ratemaking exclusions is also shown in Table 4-1. Note that even the actual return on investments recognized in rates is low compared to the companies' needs and "allowed" rates of return, and has declined since 1978.

Our current condition is in sharp contrast to the financial position we enjoyed prior to the accident. Although the financial condition of each of the three companies varied, the consolidated pre-accident financial position of the GPU System was favorable. An official of the Securities and Exchange Commission testified before the Senate Subcommittee on Nuclear Regulation and the New Jersey Board of Public Utilities (NJBPU) that, prior to the TMI-2 accident, the GPU companies were soundly capitalized. During hearings held by the PAPUC witnesses from Theodore Barry and Associates, a management consulting firm engaged by the Commission to conduct a management audit of the GPU companies, stated that "Prior to the accident, the company was prudently capitalized and its financial postion was strong and improving."

Because our financial condition has deteriorated so severely, we now have no access to external permanent capital. Moreover, our internal cash sources (i.e. customer revenues) are not sufficient to provide for cleanup expenditures beyond those available from insurance. (The PaPUC, in fact, issued an order (in September 1980) prohibiting the use of customer revenues for uninsured cleanup costs.) As a result, we are currently unable to proceed effectively and expeditiously with the cleanup.

TABLE 4-1

STATEMENT OF OPERATIONS AND RETURN ON COMMON EQUITY

(Dollars in Millions)

General Public Utilities System	1978(a)	1980(b)				
	Total System	Total System	Excluding TMI and Forked River	TMI-1	TMI-2	Forked River
Plant Values (Net of Depreciation)	$4.121	$4.379	$2.882	$ 387	$ 698	$ 412
Revenues	$1.327	$1.832	$1.809	$ 21	$ —	$ 2
Energy Costs	460	832	832			
Deferred Energy	(18)	25	25			
Other Operation and Maintenance	307	392	370	28	(6)(c)	
Depreciation	110	147	111	13	23	
Taxes Other Than Income Taxes	130	172	172			
Interest Expense	160	219	158	15	27	19
Other Income and Deductions	(4)	(7)	(7)			
Total	1,145	1,780	1,661	56	44	19
Pre-Tax Income	182	52	148	(35)	(44)	(17)
Income Tax Expense	71	16	62	(16)	(22)	(8)
Income after Taxes	111	36	86	(19)	(22)	(9)
Allowance for Funds Used during Const.	72	28	21			7
Preferred Stock Dividends	44	43	30	3	6	4
Net Income Per Income Statement	$ 139	$ 21	$ 77	$ (22)	$ (28)	$ (6)
Return on Average Common Equity	10.4%	1.5%	8.6%	(16.9)%	(11.9)%	(4.2)%

(a) Operations and return on common equity for 1978 represent the last pre-accident year.
(b) TMI-1 costs were excluded from the base rate revenues of JCP&L and the Pennsylvania subsidiaries effective April 1, 1980 and June 1, 1980, respectively. TMI-2 costs were removed from base revenues in early 1979. With respect to the Forked River nuclear generating project, the credit to income for AFC was suspended effective April 1, 1980.
(c) Includes $12 million of operation and maintenance expenditures more than offset by the reserve capacity credits.

(Dollars in Millions)

Pennsylvania Electric Company	1978(a)	1980(b)			
	Total Company	Total Company	Excluding TMI	TMI-1	TMI-2
Plant Values (Net of Depreciation)	$1.250	$1.289	$1.015	$ 97	$ 177
Revenues	$ 432	$ 522	$ 517	$ 5	$
Energy Costs	142	197	197		
Deferred Energy	3	6	6		
Other Operation and Maintenance	110	134	129	6	(1
Depreciation	38	48	39	3	6
Taxes Other Than Income Taxes	32	36	36		
Interest Expense	48	56	45	4	7
Other Income and Deductions	(2)	(8)	(8)		
Total	371	469	444	13	12
Pre-Tax Income	61	53	73	(8)	(12
Income Tax Expense	21	18	31	(5)	(8
Income after Taxes	40	35	42	(3)	(4
Allowance for Funds Used During Construction	15	4	4		
Preferred Stock Dividends	15	15	12	1	2
Earnings Available for Common Stock Per Income Statement	$ 40	$ 24	$ 34	$ (4)	$ (6
Return on Average Common Equity	9.9%	5.8%	10.2%	(12.5)%	(10.3

(a) Operations and return on common equity for 1978 represent the last pre-accident year.
(b) TMI-1 costs were excluded from the base revenues of the Company effective June 1, 1980. TMI-2 costs were removed from base revenues in early 1979.
(c) Includes $8 million of operation and maintenance expenditures more than offset by reserve capacity credits.

TABLE 4-1 (Cont'd.)

K-12

STATEMENT OF OPERATIONS AND RETURN ON COMMON EQUITY

Jersey Central Power & Light Company

($ in Millions)

	1978(a)	1980(b)				
	Total	Total	Excluding TMI and Forked River	TMI-1	TMI-2	Forked River
Plant Values (net of depreciation)	$1,719	$1,915	$1,243	$96	$164	$412
Revenues	591	883	876	5		2
Energy costs	216	450	450			
Deferred energy, net	(11)	(21)	(21)			
Other operation and maintenance	127	165	158	10	(3)(c)	
Depreciation	45	60	51	3	6	
Taxes, other than income taxes	72	105	105			
Interest expense	67	92	62	4	7	19
Other income and deductions, net	(3)	1	1			
Totals	514	852	806	17	10	19
Pre-tax income	77	31	70	(12)	(10)	(17)
Income tax expense	31	9	30	(8)	(5)	(8)
Income after taxes	46	22	40	(4)	(5)	(9)
Allowance for funds used during construction, net	30	19	12			7
Preferred stock dividends	19	18	12	1	1	4
Earnings Available for Common Stock	$ 57	$ 23	$ 40	$ (5)	$ (6)	$ (6)
Return on Average Common Equity	10.1%	3.4%	9.3%	(15.1)%	(10.5)%	(4.2)%

(a) Operations and return on average common equity for 1978 represent the last pre-accident year.

(b) TMI-1 costs were excluded from base revenues effective April 1, 1980. TMI-2 costs were removed from base revenues in early 1979. With respect to the Forked River project, the credits charged to income for the allowance for funds used during construction were suspended April 1, 1980.

(c) Includes $6 million of operation and maintenance expenditures more than offset by reserve capacity credits.

Metropolitan Edison Company

Dollars in Millions

	1978 (a)	1980 (b)			
	Total Company	Total Company	Excluding TMI	TMI-1	TMI-2
Plant Values (Net of Depreciation)	$1,127	$1,148	$596	$195	$357
Revenues	310	433	422	11	—
Energy Costs	101	185	185		
Deferred Energy	(10)	40	40		
Other Operation and Maintenance	75	96	86	12	(2)(c
Depreciation	26	39	22	6	11
Taxes Other Than Income Taxes	25	32	32		
Interest Expense	43	57	37	7	13
Total	260	449	402	25	22
Pre-Tax Income	50	(16)	20	(14)	(22)
Income Tax Expense	20	(12)	5	(6)	(11)
Income after Taxes	30	(4)	15	(8)	(11)
Allowance for Funds Used During Construction	28	4	4		
Preferred Stock Dividends	10	10	6	1	3
Earnings Available for Common Stock Per Income Statement	$ 48	$ (10)	$ 13	$ (9)	$ (14)
Return on Average Common Equity	12.9%	(2.7)%	6.2%	(13.2)%	(11.2)%

(a) Operations and return on common equity for 1978 represent the last pre-accident year

(b) TMI-1 costs were excluded from the base revenues effective June 1, 1980. The costs for TMI-2, which was placed in commercial operation in December 1978, were never reflected in base revenues.

(c) Includes $6 million of operation and maintenance [illegible] capacity credits

Question:

5. How do you currently rate GPU's ability to obtain credit in the capital markets?

Response:

Other than the Revolving Credit Agreement (RCA), no external sources of funds are currently available to the GPU Companies. The short-term debt obtained through the Revolving Credit Agreement is the maximum amount that the financial community is willing to provide. In fact, the original Agreement has been modified to reduce the credit available to GPU and its subsidiaries. On October 1, 1981, credit under the RCA was extended through December 31, 1982, but at a sharply reduced level. Previously, total credit of $412 million had been available, with an initial availability of $292 million. Under the revised agreement, total credit has been reduced to $200 million, and the amount initially available to $150 million.

Normally, the System's permanent capital is obtained through the issuance of long-term debt and preferred stock by the operating subsidiaries, and common equity by the parent company. Prior to issuing debt, the subsidiary must meet minumum earnings requirements which are set by the Securities and Exchange Commission (SEC), the subsidiary's charter, and its bond and debenture indentures. These earnings requirements are normally stated in the form of required coverage ratios, that is, the ratio of annual earnings to yearly interest payments. Neither Met-Ed nor Jersey Central currently meet legal coverage requirements for the issuance of debt. Penelec does barely meet such coverage requirements at the present time.

In addition to coverage requirements, the financial market also imposes its judgment on the marketability and safety of a company's debt. This judgment is reflected, in general, in the ratings of the company's bonds and debentures by such rating agencies as Moody's and Standard and Poor's. The bonds and debentures of each GPU subsidiary have been downgraded since the accident to below investment grade.

Similar coverage requirements and marketability/safety judgements exist for preferred stock. For common stock, no coverage requirements exist. However, in view of the severely depressed market price of GPU stock (currently about one-fourth of book value) and the fact that no dividends are currently being paid, there is no market for new GPU stock.

The GPU Companies therefore have no access to permanent capital at the present time. Their ability to regain access to the capital markets depends on the resolution of the major issues that have damaged their financial health. Chief of these are the re-inclusion of TMI costs in base rates, and, above all, the establishment of funding for TMI-2 decontamination costs.

Question:

6. What is the possibility of a GPU bankruptcy, and what would be the impacts on:

   (a) the cost and reliability of continued service to GPU's customers;

   (b) the cleanup operation at the TMI site; and

   (c) the financial health of the electric utility industry?

Response:

The financial problems that created the possibility of a GPU bankruptcy resulted from sharply increased energy costs due to the purchase of energy required to replace the lost TMI generation , the removal of TMI-1 and TMI-2 costs from the base rates of the GPU subsidiaries, and TMI-2 cleanup costs that have been or will be incurred.

Although replacement power costs incurred just after the accident were a significant cash drain, ratemaking decisions in New Jersey and Pennsylvania now allow the GPU Companies to collect the current cost of energy from customers and to collect past (deferred) energy costs through the use of a surcharge. As a result, replacement energy costs at the present time do not pose a significant financial problem to the GPU Companies. The external source of funds to finance deferred energy costs and other cash needs just after the accident was a Revolving Credit Agreement (RCA). The RCA allows up to $150 million credit for the GPU System, with individual credit sublimits for each operating company.

The GPU Companies' major near-term financial problem now is the lack of earnings and internal cash flow that has resulted from the removal of TMI-1 and TMI-2 costs from rates. The PaPUC's and NJ BPU's initial exclusions of the TMI costs from rates decreased the annual revenues of the GPU Cmpanies by $165 million. Ongoing operation and maintenance (O&M) expenses and capital service costs at TMI-1 and TMI-2 (e.g., the interest on bonds that were issued to build the plants), and TMI-2 cleanup costs not covered by insurance have been paid by the shareholder from earnings on non-TMI assets.

The restart of TMI-1 and the re-inclusion of TMI-1 costs in base rates are extremely important to the financial health of GPU and its subsidiaries. Both the Pennsylvania Public Utility Commission (PaPUC) and the New Jersey Board of Public Utility (NJBPU) have indicated a willingness to promptly restore TMI-1 costs to rates when the NRC acts to allow restart of TMI-1.

Until the GPU Companies earnings are restored, neither GPU nor any of its subsidiaries will have access to permanent capital markets. The bonds and debentures of each GPU subsidiary are rated below investment grade by such rating agencies as Moody's and Standard and Poor's as noted in our response to Question 5. GPU's common stock is currently paying no dividend and its market price is about one-fourth of book value. Moreover, there will be no market for GPU's securities until provision for funding TMI-2 decontamination costs is made.

In the longer term, GPU's major problems are accordingly to secure a funding package for TMI-2 cleanup costs and to improve earnings adequately to finance construction of new facilities to serve customers. The amount of construction and TMI-2 cleanup that can be accomplished is dependent on the ratemaking treatment of the GPU Companies receive and the success of current efforts to obtain outside funding of the cleanup. GPU's future common stock dividend policy and access to capital markets are also dependent on ratemaking and TMI-2 funding. Restoration of the dividend will be necessary to restore access to the capital markets. Appropriate ratemaking treatment of the GPU Companies existing investment in TMI-2 will also be required for them to regain access to the capital markets, since new investors would likely require assurance that they will be isolated from the financial risks associated with a potential write-off of TMI-2.

Independent studies commissioned by the PaPUC (Theodore Barry and Associates) and NJBPU (Arthur Young) have concluded that bankruptcy is not an acceptable alternative for meeting the pressing near and long term problems that confront the GPU Companies. As a result, both the PaPUC and NJBPU have publicly stated that they intend to take action to prevent insolvency or bankruptcy of any of GPU's subsidiaries. In view of these statements and the expressed willingness of the PaPUC and NJBPU to return TMI-1 to rate base when restart of the unit is approved, we do not view bankruptcy as a likely possibility.

However, if a GPU bankruptcy were to occur, many financial experts believe that it would have a serious adverse effect on the financial health of the entire utility industry. Testimony to this effect has been presented to various congressional committees and subcommittees that have investigated the TMI-2 accident.

In their view, bankruptcy would significantly increase the cost of capital for the entire industry and even preclude access to the capital markets by some weaker companies.

This view is also shared by member of the banking and investment banking communities. In a speech, on September 11, 1981, to the Edison Electric Institute Chief Executive Conference, Philip Kron, Vice-President, Citibank, stated:

> "Therefore, a key issue for you, individually and as an industry, to address is what impact would a GPU bankruptcy have on your ability to continue to issue securities in the magnitude and proportion required by your ongoing

capital expenditure programs; especially after it has been established that your industry, or at least individual companies, are not riskless. My intuition is that it would severely damage investor confidence in the electric utility industry, which, in testimony before the Udall Committee last spring, Hugh Devlin of Morgan Stanley referred to as "fragile". I question whether today's "fragile confidence" could withstand a GPU bankruptcy and the blatant exposure of your underinsurance problem. As a minimum, your cost of capital would increase to reflect the then realized nuclear risk. And, such cost would carry a risk premium beyond the 75 to 100 basis points of premium your industry is currently thought to be paying in the aftermath of the accident. I for one don't believe that a GPU bankruptcy has been fully discounted in the market and this is a view which I believe to be shared by many of your investment bankers."

Further analysis of the probable effect of a GPU bankruptcy has been done by the investment banking firm of L. F. Rothschild, Unterberg, Towbin. In their research article of April 8, 1981, "The Electric Utility Industry: the cost of Capital Effects of the Three Mile Island Mishap", Rothschild estimated that the cost of capital would be increased by 100 basis points as the consequence of a GPU bankruptcy.

They concluded their analysis by observing:

> "Obviously, the most efficient method of dealing with the problems posed by GPU is to find the least expensive and safest long run solution. If the utility industry and other responsibile authorities decide to take a hands-off approach, thereby increasing the possibility of bankruptcy, very possibly they will have opted for the least constructive and most costly solution. Our findings suggest that the higher capital costs incurred by the industry in just the last two years are substantial on a cumulative basis and could grow significantly greater if GPU defaults."

Further discussion of the probable consequences of a GPU bankruptcy is contained in Appendix G to our prepared testimony, which also indicates that bankruptcy would jeopardize the reliability and economy of electric service to GPU's customers, delay the cleanup operation and increase its cost, and impair the financial health of the electric utility industry.

Question:

7. How do the rates that are currently charged to GPU customers compare with those paid by customers of other electric utilities within Pennsylvania, and within other National Electric Reliability Council areas?

Response:

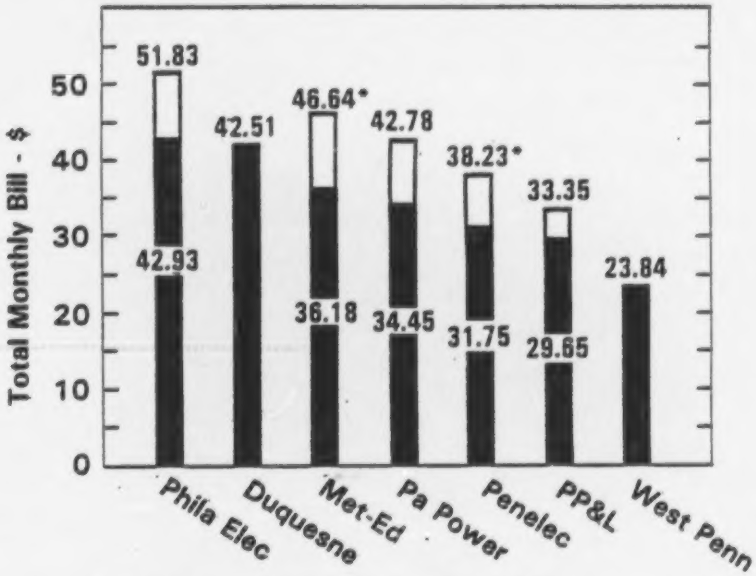
The current average rate per kilowatt hour for the GPU System is about 6.84¢. Table 1 compares the rates of our Pennsylvania Companies, Metropolitan Edison and Pennsylvania Electric with other electric utilities in that state. Table 2 compares the rates of Jersey Central Power & Light Company with those of other public utilities in the region. The table included in the response to Question 8 and the tables in the response to Question 10 address comparative rates with other electric utilities.

K-22

Table 1

Typical Bill Comparisons, Penelec and Met-Ed Compared to other Pennsylvania Utilities

Residential No Water Heating 500 KWH/Month



■ Rates in effect in August 1981

☐ If pending rate increase were granted in full

¢/Kwh

■ 8.6 8.5 7.2 6.9 6.4 5.9 4.8

☐ 10.4 - 9.3 8.6 7.6 6.7 -

* Stages 1 and 2, offset by TMI-1 energy cost savings and expiration of deferred energy cost surcharges

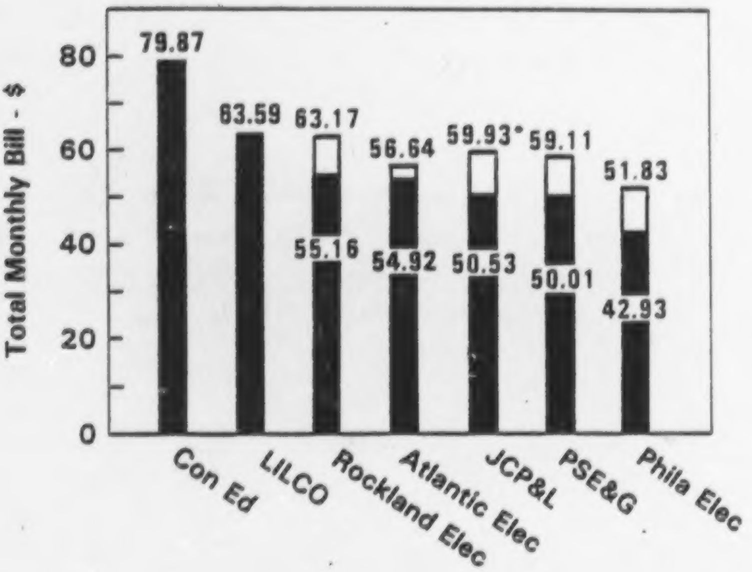
9/2/81

Table 2

K-23

Typical Bill Comparisons
Jersey Central and Neighboring Utilities

Residential No Water Heating 500 KWH/Month



■ Rates (summer) in effect as of August 31, 1981

☐ If pending rate increase were granted in full

¢/Kwh:

■	16.0	12.7	11.0	11.0	10.1	10.0	8.6
☐	-	-	12.6	11.3	12.0	11.8	10.4

* Stages 1 and 2, plus estimated March 1982 LEAC (reflecting 12 months of TMI-1 generation) and expiration of deferred energy cost surcharge

9/9/81

K-24

Question:

8. Compare the rate of increase of the rates charged to GPU customers from the March 1979 accident to present with the increase in rates to:

  - other electric utility customers within the state, and
  - customers in other National Electric Reliability Council areas.

Response:

The table below compares the increases in electric rates from the time the TMI-2 accident through March, 1981, for the GPU Companies and other selected United States Utilities.

INCREASES IN ELECTRIC RATES FROM TIME OF TMI-2 ACCIDENT THROUGH MARCH 1981, SELECTED UTILITIES

	Average Rev. Per Kwh Sold*			
	Quarter Ended 3/31/79	Quarter Ended 3/31/81	Increase Amount	Increase %
Neighboring Eastern Utilities				
Atlantic Electric	4.49¢	7.12¢	2.63¢	59%
Delmarva Power	4.38	6.18	1.80	41
Philadelphia Electric	4.29	6.47	2.18	51
Public Service	5.21	7.26	2.05	39
Other Utilities Nationwide				
Boston Edison	4.70¢	7.82¢	3.12¢	66%
Commonwealth Edison	3.84	5.56	1.72	45
New England Electric System	4.71	7.85	3.14	67
Northeast Utilities	4.12	6.79	2.67	65
San Diego Gas & Electric	5.26	9.82	4.56	87
GPU				
Met-Ed	3.80¢	5.82¢	2.02¢	53%
Penelec	4.10	4.57	0.47	11
Jersey Central	4.42	6.78	2.36	53
GPU System	4.15¢	5.77¢	1.62¢	39%

Question:

9. At the time of the March, 1979, accident, what fraction of electric ratepayers' disposable income was spent on electricity within:

   (a) the GPU Service Area

   (b) Pennsylvania

   (c) each of the National Reliability Council areas?

Response:

See response to Question 10.

Question:

10. At the present time, what is the fraction of electric ratepayers' disposable income being spent on electricity within the areas listed in the previous question?

Response:

Data sufficient to answer question 9 for 1979 and question 10 for 1981 has not been analyzed in time to meet the October 19 response date. Attached are the following tables that do provide such a comparison based on statistics for calendar year 1980.

Table 1: Analysis of relative impact on residential disposable income of residential electric bills in selected eastern utilities.

Table 2: Residential heating customers' average annual bill, their average rate and their percentage of total residential customers for selected eastern utilities.

Tabel 3: Average annual bill expressed as a percent of disposable income, residential heating customers.

Table 4: Table 1 adjusted to exclude state and local taxes.

Table 5: Taxes other then income taxes expressed as a percentage of electric operating revenues.

Table 6: Residential revenue rate per kwh and average annual bill for selected eastern utilities.

TABLE 1

Analysis of Relative Impact on Residential Disposable Income of Residential Electric Bills in Selected Eastern Utilities

	Average Household Statistics				
	Annual Usage Kwh	Average Residential Rate ¢/Kwh	Average Residential Annual Bill $	Disposable Income 1980 $	% Bill of Disposable Income
Atlantic Electric	8,003	6.71¢	$537	$20,750	2.59%
Baltimore Gas & Electric	7,956	5.71	454	24,850	1.83
Boston Edison	5,378	8.05	433	23,530	1.84
Con-Ed	3,346	11.87	397	23,920	1.66
Delmarva (Cons.)	8,337	7.07	589	26,260	2.24
Duquesne	5,770	6.83	394	24,900	1.58
GPU	7,726	6.65	514	22,480	2.29
Jersey Central	8,280	7.55	625	25,120	2.49
LILCO	6,956	8.46	589	26,280	2.24
Met-Ed	7,840	6.21	487	22,290	2.18
Penelec	6,872	5.51	378	19,610	1.93
PP&L	9,205	4.34	400	21,440	1.87
Philadelphia Electric (Cons.)	7,058	7.29	514	24,130	2.13
Public Service	5,443	8.42	458	26,730	1.71

Data Sources

1. Household Size: U. S. Statistical Abstract, 1980, Population/Households for 1978 by State.
2. Income and Population: by representative counties for each utility from NPA 1980 estimated data by NPA.
3. Disposable Income: 1980 national factor .843 from DRI.
4. Annual Usage & Average Residential Rate: EEI Uniform Statistical Reports, Year 1980.

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TABLE 2

Selected Eastern Utilities
Residential Electric Heating Customers,
% of Total Residential Customers, Average Annual Bill and Rate per Kwh
Year 1980

	Annual Res. Rev. ($ Millions)			Annual Res. Sales (Gwh)			Average Customers (000's)			Residential Heating Customers		
	Total Res.	Res. Heating	Heating as % of Total Res.	Total Res.	Res. Heating	Heating as % of Total Res.	Total Res.	Res. Heating	Heating as % of Total Res.	Average Annual Use per Customer (Kwh)	Average Annual Bill ($)	Average Revenue per Kwh (¢/Kwh)
Atlantic Electric	$168.7	$ 44.1	26.1%	2,515	749	29.8%	314	52	16.6%	14,348	$ 844	5.88¢
Baltimore Gas & Electric	342.8	60.5	17.6	6,005	1,262	21.0	755	69	9.1	18,245	875	4.79
Boston Edison	213.4	22.5	10.5	2,652	355	13.4	493	29	5.9	12,254	777	6.33
Con-Ed	946.3	Not Available		7,969	Not Available		2,382	Not Available		Not Available		
Delmarva (Cons.)	144.6	37.1	25.7	2,047	591	28.9	245	41	16.7	14,243	894	6.28
Duquesne	196.4	12.6	6.4	2,876	250	8.7	498	17	3.4	15,055	759	5.04
GPU	719.2	154.8	21.5	10,810	2,667	24.7	1,399	152	10.8	17,616	1,023	5.81
Jersey Central	393.4	84.9	21.6	5,211	1,325	25.4	629	77	12.2	17,242	1,105	6.41
LILCO	478.6	27.0	5.6	5,655	390	6.9	813	25	3.1	15,817	1,092	6.91
Met-Ed	155.2	38.9	25.1	2,501	701	28.0	319	40	12.5	17,626	980	5.56
Penelec	170.6	31.0	18.2	3,098	641	20.7	451	35	7.8	18,429	890	4.83
PP&L	349.7	127.9	36.6	8,055	3,363	41.8	875	165	18.9	20,389	776	3.80
Philadelphia Electric (Cons.)	607.8	68.2	11.2	8,341	1,139	13.7	1,182	58	4.9	19,482	1,167	5.99
Public Service	684.3	33.3	4.9	8,129	522	6.4	1,493	35	2.3	15,023	957	6.37

Source: EEI Uniform Statistical Reports, FERC Form 1.

5/14/81

TABLE 3

Selected Eastern Utilities
Average Annual Bill as a Percent of Customers' Disposable Income, Residential Electric Heating Customers
Year 1980

	Annual Usage per Customer (Kwh)	Average Rate per Kwh (¢)	Average Annual Bill ($)	Disposable Income per Household ($)	Annual Bill as % of Disposable Income
Atlantic Electric	14,348	5.88¢	$ 844	$20,750	4.1%
Baltimore Gas & Electric	18,245	4.79	875	24,850	3.5
Boston Edison	12,254	6.33	777	23,530	3.3
Con-Ed		Not Available		23,920	-
Delmarva (Cons.)	14,243	6.28	894	26,260	3.4
Duquesne	15,055	5.04	759	24,900	3.0
GPU	17,616	5.81	1,023	22,480	4.6
Jersey Central	17,242	6.41	1,105	25,120	4.4
LILCO	15,817	6.91	1,092	26,280	4.2
Met-Ed	17,626	5.56	980	22,290	4.4
Penelec	18,429	4.83	890	19,610	4.5
PP&L	20,389	3.80	776	21,440	3.6
Philadelphia Electric (Cons.)	19,482	5.99	1,167	24,130	4.8
Public Service	15,023	6.37	957	26,730	3.6

Sources: Use per customer, average rate per Kwh and average annual bill from EEI Uniform Statistical Reports. Disposable income based on analysis of representative counties for each utility using data from NPA, DRI and U. S. Statistical Abstract for 1980.

TABLE 4

Selected Eastern Utilities
Average Annual Residential Electric Bills (Adjusted to Exclude State & Local Taxes) as a % of Customers' Disposable Income
1980

	Disposable Income Per Household ($)	Average Annual Bill, Adjusted to Exclude Estimated State & Local Taxes($)*		Adjusted Annual Bill as a % of Disposable Income	
		All Residential Customers	Res. Customers with Elec. Heat	All Residential Customers	Res. Customers with Elec. Heat
Atlantic Electric	$20,750	$469	$737	2.3%	3.6%
Baltimore Gas & Electric	24,850	418	805	1.7	3.2
Boston Edison	23,530	388	696	1.6	3.0
Con-Ed	23,920	329	Not Available	1.4	-
Delmarva (Cons.)	26,260	562	854	2.1	3.3
Duquesne	24,900	366	705	1.5	2.8
GPU	22,480	466	927	2.1	4.1
Jersey Central	25,120	551	974	2.2	3.9
LILCO	26,280	508	941	1.9	3.6
Met-Ed	22,290	451	908	2.0	4.1
Penelec	19,610	352	829	1.8	4.2
PP&L	21,440	360	698	1.7	3.3
Philadelphia Electric (Cons.)	24,130	480	1,090	2.0	4.5
Public Service	26,730	393	821	1.5	3.1

*State and local tax component estimated by applying ratio of taxes other than income taxes to electric operating revenues, year 1980 (except Atlantic Electric - 1979 ratio used).

TABLE 5

Selected Eastern Utilities
Taxes Other than Income Taxes as a % of Electric Operating Revenues
1979, 1980

	1980			1979		
	Electric Opr. Revs. ($ Millions)	Taxes Other than Inc. Taxes ($ Millions)	Taxes as % of Opr. Revs. (%)	Electric Opr. Revs. ($ Millions)	Taxes Other than Inc. Taxes ($ Millions)	Taxes as % of Opr. Revs. (%)
Atlantic Electric	$ 358.4	$35.5	9.9%	$ 283.1	$35.9	12.7%
Baltimore Gas & Electric	857.3	68.7	8.0	715.0	67.9	9.5
Boston Edison	837.5	87.4	10.4	659.0	84.0	12.7
Con-Ed	3,198.3	545.7	17.1	2,729.5	508.9	18.6
Delmarva (Cons.)	443.9	20.1	4.5	363.7	15.5	4.3
Duquesne	674.7	47.6	7.1	611.5	47.0	7.7
GPU	1,829.3*	172.5	9.4	1,487.7*	149.4	10.0
Jersey Central	883.0	104.8	11.9	664.9	94.0	14.1
LILCO	1,039.7	143.6	13.8	860.8	128.5	14.9
Met-Ed	432.7	31.4	7.3	338.1	22.6	6.7
Penelec	519.7	36.1	6.9	490.6	32.5	6.6
PP&L	880.3	87.8	10.0	856.5	69.3	8.1
Philadelphia Electric (Cons.)	1,767.0	117.2	6.6	1,311.9	93.4	7.1
Public Service	2,083.9	294.9	14.2	1,689.9	254.2	15.0

Source: EEI Uniform Statistical Reports, FERC Form 1.

*Reflects intercompany eliminations.

TABLE 6

Selected Eastern Utilities'
Residential Revenue, Rate per Kwh and Average Annual Bill*
Year 1980

	Annual Revenue ($ Millions)	Annual Sales (Gwh)	Average Rate Per Kwh (Cents)	Average Customers (000's)	Avg. Annual Use Per Customer (Kwh)	Average Annual Bill ($)
Atlantic Electric	$168.7	2,515	6.71¢	314	8,003	$537
Baltimore Gas & Electric	342.8	6,005	5.71	755	7,956	454
Boston Edison	213.4	2,652	8.05	493	5,378	433
Con-Ed	946.3	7,969	11.87	2,382	3,346	397
Delmarva (Cons.)	144.6	2,047	7.07	245	8,337	589
Duquesne	196.4	2,876	6.83	498	5,770	394
GPU	719.2	10,810	6.65	1,399	7,726	514
Jersey Central	393.4	5,211	7.55	629	8,280	625
LILCO	478.6	5,655	8.46	813	6,956	589
Met-Ed	155.2	2,501	6.21	319	7,840	487
Penelec	170.6	3,098	5.51	451	6,872	378
PP&L	349.7	8,055	4.34	875	9,205	400
Philadelphia Electric (Cons.)	607.8	8,341	7.29	1,182	7,058	514
Public Service	684.3	8,129	8.42	1,493	5,443	458

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*All residential customers, including electric water and space heating customers (source: EEI Uniform Statistical Reports, FERC Form 1).

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Question:

11. Identify the source and magnitude of the funds used to date to cleanup the TMI site.

Response:

To date, all cleanup costs, (about $205.1 million) have been paid by the insurers. However, until December, 1980, receipt of the insurance proceeds lagged cleanup expenditures. To meet cleanup expenses prior to receipt of insurance money, GPU used short-term borrowings. Interest (about $11 million) on these borrowings was paid from stockholder funds generated by non-TMI property. Additionally, non-cleanup related O&M costs (about 36.4 million) have been paid from stockholder funds. None of the costs incurred at TMI-2 are being recovered from ratepayers.

Question:

12. What are your estimates of the schedule for completion of the cleanup of of TMI site, and the cost of meeting that schedule?

Response:

It is currently estimated that the completion of the cleanup will cost $760 million and take six years to accomplish. This cost estimate, prepared jointly by GPU Nuclear Corporation and Bechtel Corporation, is attached.

INTRODUCTION

Within weeks of the accident at Three Mile Island-Unit 2, efforts were undertaken to develop a very preliminary estimate of the possible costs of the cleanup program. There was clear understanding that the estimate would be subject to substantial change because of the unique nature of the accident, the many unknowns associated with the condition of the plant, and the difficulties in defining the level of technical and construction effort required when so many uncertainties existed.

In the year that followed tens of thousands of man-hours were devoted to the cleanup effort, the acquisition of technical data, and the development of a comprehensive plan to deal with the complex recovery activities.

The August 1, 1980 Recovery Program Estimate and accompanying report constituted the first definitive estimate of the TMI-2 cleanup and recovery program. It incorporated an assessment of plant conditions as of June, 1980, a definitive work plan and schedule which benefited from the recovery program experiences of the preceding 16 months, and a significantly improved understanding of the magnitude of cost and complexity of the Recovery Program.

A number of technical and programmatic uncertainties remained, and the regulatory environment at that time had substantial impact on the activities planning at Three Mile Island. The containment building had been entered only once as of the August report, and the full scope of the challenges in decontaminating the reactor remained in question, although much was learned from the entry. The issue of ultimate waste disposal as impacted by on-going Federal and State Regulatory developments in that field, gave rise to a certain speculative quality to the estimate in that area.

In November 1980, an evaluation of regulatory progress and a better definition of financial resources resulted in the production of an updated cost assessment for the Programmatic Environmental Impact Statement (PEIS) for TMI-2. Costs based on data presented in the earlier, August 1980 report were used for that assessment. The PEIS reassessment included only the cleanup portion of the recovery program costs. Normal operations and maintenance and plant restoration costs were excluded, but an inflation factor for the cleanup costs was included. That assessment also considered the effects of a stretched-out schedule caused by the reduction in the level of effort, which occurred in September 1980 in response to the imposition of financial constraints and regulatory uncertainties pending issuance of the final PEIS.

In April 1981, the updated, current cost assessment was completed. All data in this report are derived from that assessment. The Recovery Re-evaluation Schedule formed the basis of that assessment and represents the latest planning, but most probably not the final plan, for the cleanup of TMI-2. The conditions influencing the planning remain fluid. Conditions and factors both within the plant and other factors, such as regulatory and financial matters, remain uncertain to varying degrees. Efforts to develop an optimum plan that provides for both worker and public health and safety and accomplishes the cleanup task in an efficient, cost-effective manner continues in a complex setting.

This report assumes that the full program can be initiated in January, 1982; however, additional slippage from that schedule is probable, since it is highly unlikely that resolution of the financing problems for the total cleanup will be completed by that time. The program estimate excludes costs for either reconstruction or decommissioning of the plant. Resources were not devoted to upgrading the quality of post-cleanup phase estimates during the development of the current cost and schedule reassessment. In addition, the nature and extent of either reconstruction or decommissioning activities require better definition before more definitive cost and schedule estimates can be prepared. Omission of reconstruction costs is particularily noticeable in the last year (1987) of the estimated cash flow which shows only a small expenditure in the last year, representing some final waste disposal and miscellaneous cleanup. Project management and other support, as well as the base operations and maintenance, are not included for 1987, since it is assumed that those portions of the costs would continue to some extent, but in support of either reconstruction or decommissioning.

To provide a more complete cost overview, the current estimate shows additional costs generated by the inclusion of the continuing base plant operations and maintenance and escalation ranging from 8 to 9 percent per year. The base amounts set forth in the estimate are stated in 1980 dollars to be compatible with the former, August 1980 estimate from which they were derived.

The user of this report must consider the unique, complex nature of the recovery program. While all care has been taken to prepare a complete estimate incorporating known data, after seven entries into the Containment Building, the program schedule remains in the developmental stage and may have substantial future alterations depending on technical, regulatory and financial developments which would impact the program duration, magnitude and cost in either a positive or negative way.

RECOVERY PROGRAM

The accident of March 28, 1979, at TMI-2 left the plant in a condition with a heavily damaged reactor core, extensive contamination inside the containment building, large amounts of liquid, solid, and gaseous waste to be either processed or disposed of, and significant contamination to a lesser degree in the auxiliary and fuel-handling buildings.

Immediately after the accident, total attention was focused on maintaining the plant safety and on minimizing the radiological impact on the population and areas surrounding the plant and the plant staff. Since that time, efforts have continued to be focused on maintaining the reactor safety. Additionally, cleanup and decontamination of the auxiliary buildings, including processing of contaminated water, has been proceeding. Most of the residual radiological gases have either decayed away or have been disposed of. Actual cleanup of the containment building and removal of the damaged fuel core have not been started. Because the cleanup and recovery work involve operations not normally associated with routine power plant operation, considerable resources since the accident have been expended for engineering and planning of necessary facilities to accomplish the cleanup and recovery since the accident.

The basic logic of the early planning was to concentrate on cleaning up those portions of the TMI-2 plant external to the containment building. The operations in the fuel handling and auxiliary buildings were less demanding than those which will ultimately be required inside containment building. They have, however, provided a basis for organizing a firmer plan for work in the containment building.

The containment recovery activities represent technically the most demanding part of the total TMI-2 job. Surface contamination in the containment building is more extensive than elsewhere, overall radiation levels are higher, and the contamination has been present on the surfaces and within the systems for a longer period. Removal of the fuel from the reactor vessel is the most critical operation and the one of maximum technical concern. The core is believed to be significantly damaged in the central region and not amenable to handling by conventional techniques. Removal of the fuel is expected to require complex remote grappling, vacuum-type pickup of fuel particles, and possibly removal by chemical cleaning.

The new schedule has as its goal the earliest possible access to the reactor head, to conduct in-reactor inspections and then lift it from the reactor. That will allow considerable time to design the special tools and equipment necessary for removing the fuel, as well as to assess any additional problems. The approach will be to clear and decontaminate a path and a sufficient area around the reactor head to permit work to proceed on lifting the head before decontaminating the entire building interior. At the same time, work will proceed on decontaminating, inspecting and requalifying the polar crane, which is needed to lift the head. An extra benefit to this schedule is that when the early condition of the core is known, a decision can be made to remove the fuel earlier than scheduled if it is found to be amenable to removal with then available hardware and techniques. Alternately, if considerable replanning and/or equipment development is necessary, additional building decontamination can be done during the delay.

All operations inside the containment building are intended to be performed in an established and controlled sequence. It should be recognized, however, that changes to the sequence are both possible and probable as work progresses and more is known. The critical path sequence established for the early core removal planning in the Recovery Re-evaluation Schedule is:

1. Construction and procurement of decontamination equipment, materials and support systems and facilities, including completion of the processed water storage system.

2. Decontamination of portions of the containment building sufficient for limited access and cleanup of the polar crane, including placement of local shielding.

3. Refurbishment and requalificatiion of the polar crane, and decontamination of the refueling and fuel transfer areas and handling equipment.

4. Planning for, and ultimately removing, the reactor vessel head and plenum.

5. Detailed examination of the reactor core and subsequent removal of the fuel.

6. Chemical decontamination of the reactor coolant system.

7. Removal of lower reactor pressure vessel internals.

The performance of the work inside containment will be constrained by the limitations on numbers of people and stay times, the need for supportive systems to sustain the work force inside containment, the absolute need for detailed radiological controls and monitoring of the workers, and the concurrent requirement for continuing technical development of cleanup techniques based on the expanding experience base.

An overall program based on TMI-2 recovery experience to date has been developed and is shown in detail in Figure RRS-1 of the Appendix. A simplified program critical path and schedule is indicated in Figure 1.

The time spans in the schedule outlined as the basis for the cost estimate are believed to be achievable, subject to the detailed assumptions outlined on pages 17 and 18. These assumptions, the lack of sufficient technical information inside containment, regulations concerning waste disposal, and the general regulatory environment are judged to be controlling factors upon the schedule. Key milestones from the schedule include:

-Initiate processing of containment sump water	July 1981
-Construction remobilization	January 1982
-Complete containment sump water processing	January 1982
-Initiate containment decontamination	August 1982
-Reactor vessel head removal	December 1983
-Completion of auxiliary/fuel building cleanup*	January 1984
-Reactor fuel removal	February 1985
-Containment decontamination complete*	August 1986

*Minor cleanup will continue past date shown.

As a final note, it should be pointed out that the cleanup approach presented in this document deviates somewhat from the program discussed in the PEIS. This may require supplements to the PEIS before this approach can be finalized. The nature and extent of potential delays, caused by such regulatory interaction, are not defined at this time.

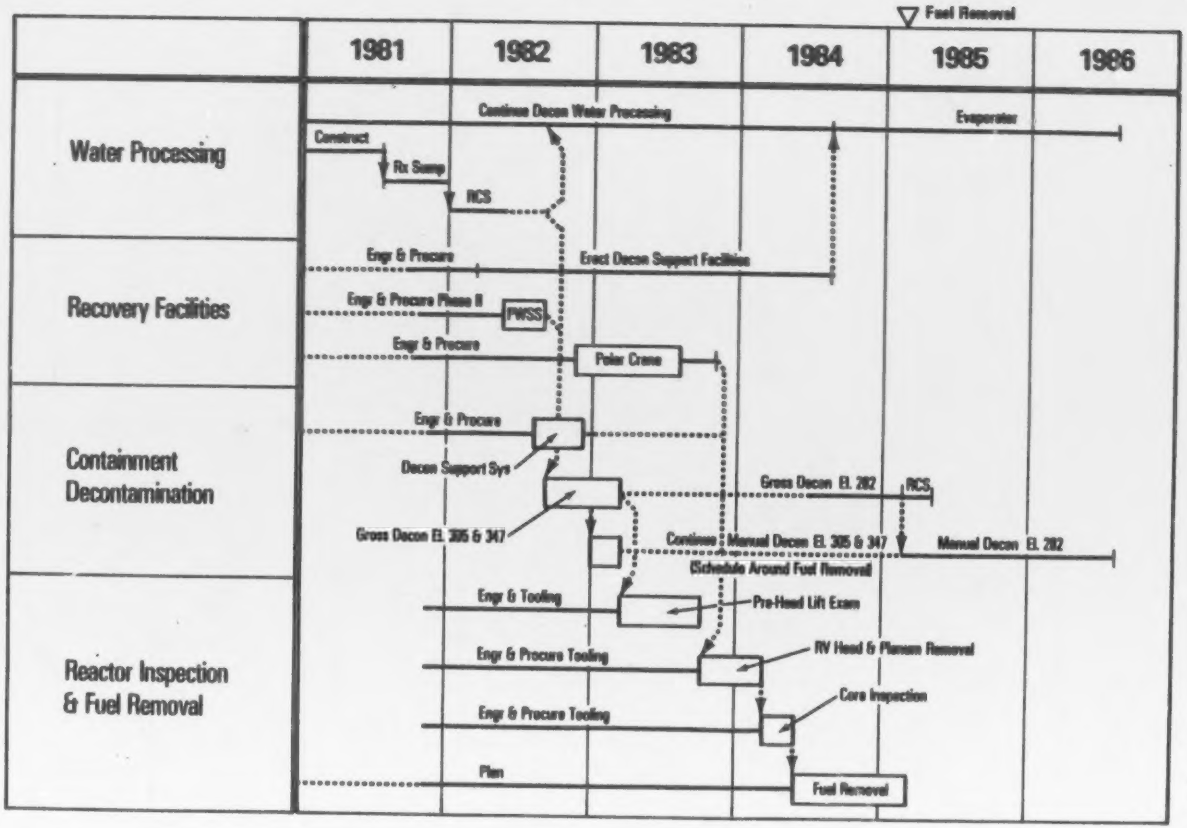


Figure 1 — TMI-2 Recovery Program Critical Path Schedule

COST SUMMARY

The total estimated cost to be expended for TMI-2 during the recovery program, excluding reconstruction or decommissioning, based on actual 1979 and 1980 costs, 1981 budgeted costs and estimated costs for 1982 through final decontamination under the assumptions detailed in Table II, is $1,034 million. Of that amount $880 million is related to recovery/cleanup, and $154 million for additional base operations and maintenance costs.

For completeness, and to identify compatibility of this estimate with recent proposals on cleanup funding, which contain cost numbers, the following summarization is provided:

	Millions of Dollars	
- 1982-1987 Estimated Costs to Maintain Plant is Safe Condition Until Defueled	$ 103	
- 1982-1987 Additional Cost to Defuel Reactor and for Containment Decontamination	372	
- 1982-1987 Escalation on the Above	179	
Subtotal		$ 654
- 1982-1986 Estimated Additional Base Plant Operations & Maintenance	75	
- 1982-1986 Escalation on Base Plant O&M	30	
Subtotal		105
TOTAL - 1982-1987 Estimated Costs		$ 759
- 1979 & 1980 Actual/1981 Budgeted Costs-Recovery/Cleanup	226	
- 1979 & 1980 Actual/1981 Budgeted Costs-Base Plant O&M	49	
TOTAL - 1979-1980 Actual Costs		$ 275
TOTAL - 1979 through 1987 Actual/Estimated Costs		$ 1,034

NOTE: 1987 includes only minor cleanup work. Base operations and maintenance are included only to 1986.

Table I breaks out, by major program elements, the unescallated $475 million portion of the cleanup costs, not including base operations and maintenance, estimated for the period 1982 through 1987. The table briefly identifies a meaningful category (element) of the program, estimated costs, and the time period in which that part of the activity takes place. The major elements of the program, categories A-K of Table I, generally represent readily identifiable work and flow in an approximate sequential progression. The cost associated with each of the categories (elements) includes various functional activities such as engineering, operations, waste disposal, decontamination, reconstruction, etc. A detailed breakout of these functional activities within each program category (A-K), as well as a breakdown between material and labor costs, is given in Table III. In reading the table it should be recognized that certain long lead planning, engineering and preparatory activities may precede the indicated start of work and certain final cleanup activities will extend beyond the indicated time. The time phasing of each of the activities in Table I, Items A-K are further shown on a simplified schedule Figure 2.

Within Table I, all of the program activities are grouped into two principal categories: (1) those associated with maintaining the plant in a safe condition while the fuel is still in the reactor, and (2) those associated with defueling the reactor and performing final decontamination of the containment building. This first activity group and part of the second (including defueling) are considered required regardless of plans, schedules or decisions for other activities, because of their critical nature in maintaining the safe condition of the plant and ultimately removing the source of the continuing threat to the public and worker health and safety.

Total program cash flow for each of the two principal categories described above is shown in Figure 3. This figure excludes costs for 1981 and prior years. The curves are cumulative. A representation of total cash flow requirements, including 1981 are shown in Figure 4.

TABLE I EXECUTIVE COST SUMMARY

DESCRIPTION OF ACTIVITY	(1982-1987) Estimated Cost^2 In Millions	Schedule Duration^1
MAINTAINING PLANT IN SAFE CONDITION (While Fuel is in Reactor)		
A. Operation of existing and modified plant systems and equipment required to maintain the core in a safe condition. Includes operating personnel; support staff and consumable supplies until core removal.	41.	Present - Feb '85
B. Site support services, other than the operating staff noted above required to support site activities but not directly associated with and specific construction end-product or operating facility. These support services include security, QA/QC, procurement, warehousing, accounting, training, industrial health & safety, etc. until core removal.	21.	Present - Feb '85
C. Decontamination of auxiliary buildings and contaminated equipment and processing of auxiliary & fuel building contaminated water. Includes operating personnel, radiological control staff, and contractor personnel required to operate the associated waste processing systems and laundry facilities; construction of interim waste staging facilities and associated waste disposal.	16.	Present - Jan '84
D. Processing of highly contaminated water in the containment building and reactor coolant system. Includes installation and operation of associated water processing systems and additional waste staging capability.	25.	Present - Jul '82
Subtotal (A-D)	$103.	

TABLE I EXECUTIVE COST SUMMARY (CONTINUED)

DESCRIPTION OF ACTIVITY ADDITIONAL COST TO DEFUEL REACTOR FOR CONTAINMENT DECONTAMINATION	(1982-1987) Estimated Cost[2] In Millions	Schedule Duration[1]
E. Additional facilities required to decontaminate the containment building. Includes design & construction of evaporator/solidification facility, hot chemistry lab., containment recovery service building, personnel access facility, laundry, etc.	84.	Present - Jul '84
F. Gross decontamination of the containment building to permit fuel removal operations to proceed within acceptable radiological limitations. Includes installation of decontamination support systems, shielding and manual, supervisory and support personnel for decontamination operations.	63.	Aug '82 - May '85
G. Head and core removal. Includes engineering, consultant and direct labor associated with technical preparation, removal of reactor head and internals, dismantling, inspection and transfer of core to fuel pool	63.	Apr '83 - Feb '85
H. Additional facilities required to temporarily house contaminated equipment and material removed from the containment building. Includes the engineering design and construction of additional radwaste staging facilities, solid and liquid.	9.	Sep '82 - Sep '83
I. Additional decontamination of the containment building and removal of contaminated equipment and materials to staging areas. Includes the operation of associated decontamination, waste packaging, processing and disposal operations.	110.	Jan '83 - Aug '86

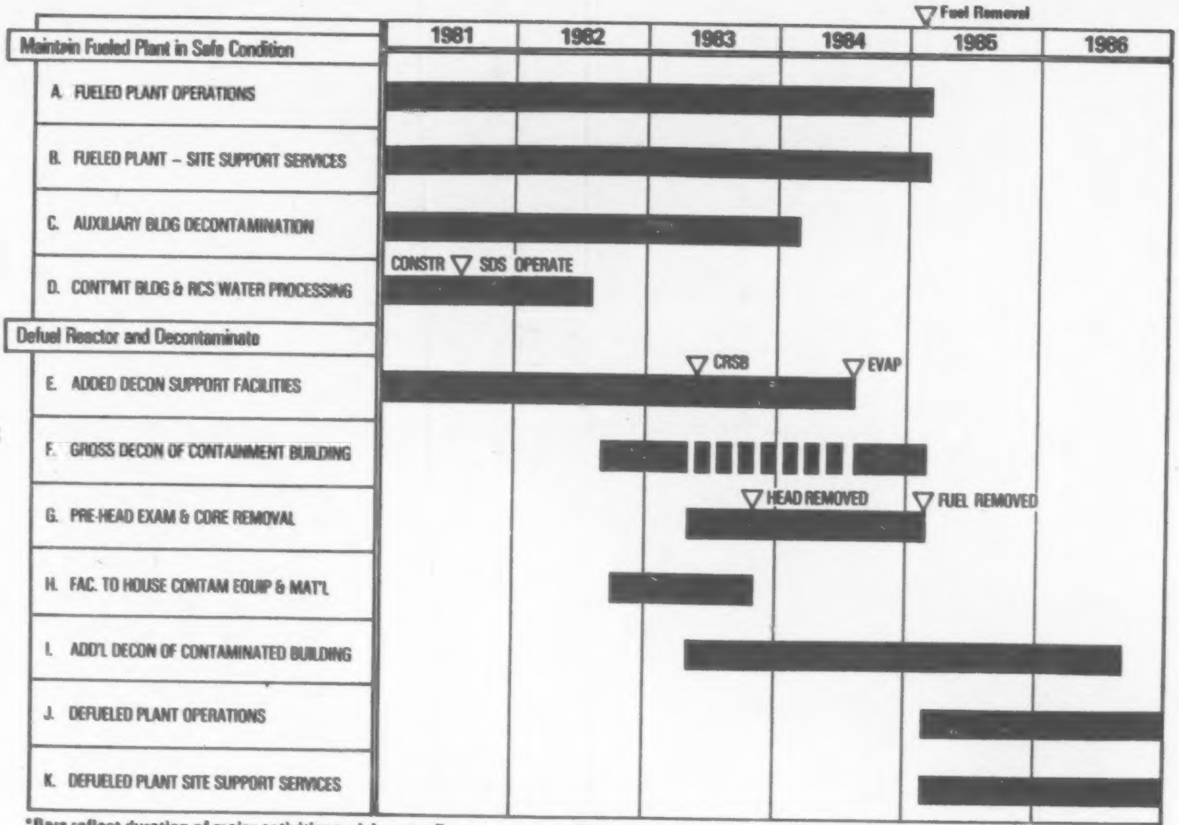
TABLE I EXECUTIVE COST SUMMARY (CONTINUED)

DESCRIPTION OF ACTIVITY	(1982-1987) Estimated Cost[2] In Millions	Schedule Duration[1]
J. Operation of existing plant systems after damaged core is removed from reactor until completion of decontamination. Includes operating personnel, support staff and consumable supplies.	30.	Feb '85 - Dec '86
K. Site support services, other than the operating staff noted above, required to support site activities but not directly associated with any specific construction end-product or operating facility during interval between removal of damaged core until completion of decontamination.	13.	Feb '85 - Dec '86
Subtotal (E-K)	$372.	
Grand Total (A-K)	$475.	

NOTES:

1. The schedule duration represents time span of substantial activity. Some minor activity or engineering and planning may occur before and after the dates shown. Categories indicating "present" time are continuation of activities from prior years.

2. Costs are in constant 1980 dollars.



*Bars reflect duration of major activities and do not reflect preparatory efforts.

Figure 2 — TMI-2 Recovery Programs Activity Schedule

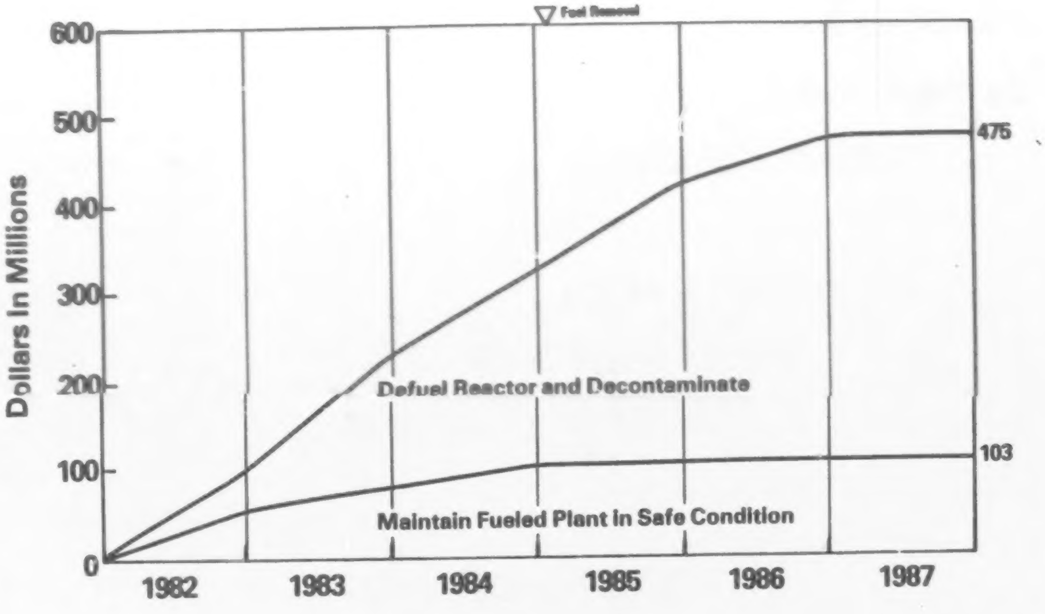


Figure 3 — TMI-2 Total Recovery Program Cash Flow
(Exclusive of 1981 and Prior Years Costs — Constant 1980 Dollars)

7/81

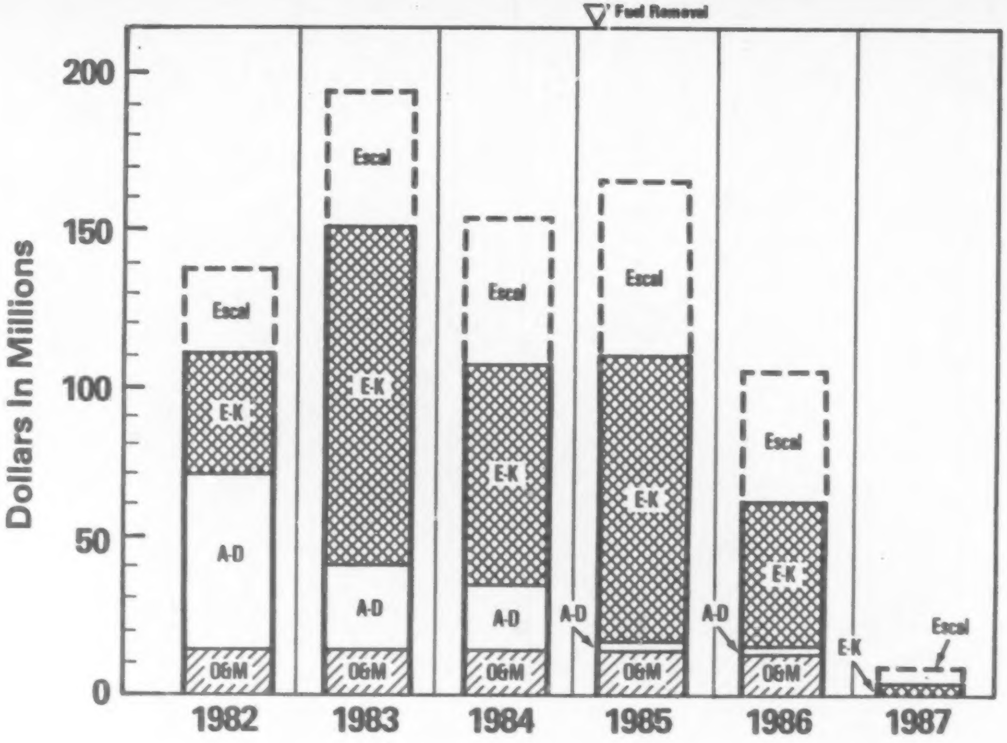


Figure 4 — TMI-2 Cash Flow (1980 Constant Dollars)

7/81

Question:

13. What will be the impact of these estimates of the failure to resolve promptly the financial uncertainties?

Response:

For every year that passes without significant progress being made on the cleanup, an additional ninety to one hundred million dollars is added to the prospective cost. As long as the TMI cleanup is not moved forward on an expeditious schedule, potential hazards to the health and well-being of the residents of central Pennsylvania remain. It is therefore imperative that the impasse surrounding the development of an appropriate mechanism for funding the cost of the cleanup be developed in short order.

Question:

14. Summarize your group (agency) involvement in the TMI-2 cleanup.

Response:

General Public Utilities Corporation, through its operating subsidiaries Metropolitan Edison Company, Pennsylvania Electric Company, and Jersey Central Power & Light Company, is the owner of the Three Mile Island Nuclear Station. Metropolitan Edison Company (a GPU subsidiary) is the licensee.

Question:

15. Discuss the degree of foreign interest in joint financial participation in the cleanup.

Response:

GPU has not had any substantive discussions with potential foreign participants in the cleanup. We understand that there has been some informal indication of interest by groups in other countries. We are aware that the U.S. Department of Energy is attempting to assess the degree of foreign interest in cleanup, and may have some indication of possible foreign interest in the near term.

Question:

16. What is the anticipated schedule for the restart of TMI-1, and what would be the effect of the restart on GPU's financial condition.

Response:

All modifications to allow restart of TMI-1 should be completed by the end of 1981. As a result, GPU will be ready to restart TMI-1 by January 1, 1982.

As discussed in Appendix H of W. G. Kuhns testimony, restart may be delayed due to regulatory/licensing constraints. To take into account the potential delays described in Appendix H, GPU has, for financial planning purposes, assumed that TMI-1 will restart by April 1, 1982.

Both the Pennsylvania and New Jersey regulatory commissions have indicated that the capital and operating costs of TMI-1 will be promptly reincluded in the rates of Met-Ed, Penelec and Jersey Central, GPU's operating subsidiaries that own TMI-1, when the unit returns to service. Re-inclusion of these costs in rates will improve GPU's earnings and therefore begin to restore its financial health.

At the same time, the operation of TMI-1 is expected to substantially reduce the GPU Companies' replacement power costs, and these reductions would be reflected in lower charges to customers for energy costs.

As discussed in more detail in Appendix D of W. G. Kuhns testimony and in Exhibit D-12 attached to that Appendix, the GPU Companies now have rate increase requests pending before their state commissions, and the TMI-1 components of these filings, in the aggregate, are as follows:

	Annual Revenue ($ Millions)	Rate Per Kwh (Cents)	% Change Over Current Rates
Increase required to re-include TMI-1's capital and operating costs in rates (1)	$ 146	0.47¢	7%
Reduction reflecting expected TMI-1 energy costs savings (2)	(178)	(0.57)	(9)
Net TMI-1 reduction	$(32)	(0.10)¢	(2)%

(1) as claimed in both stages of the filings.

(2) does not reflect offsetting increases in "non-TMI" energy costs.

If granted in full, the increases to restore TMI-1's capital and operating costs to rates would, on an annualized basis, increase Jersey Central's and Penelec's interest coverage ratios by about 0.4 times , and Met-Ed's by about 1.1 times . The interest coverage ratio, or the ratio of earnings to interest charges, is a key indicator of financial health, and must be above 2 times for long-term debt to be issued.

Currently (as of August 31, 1981), the coverage ratios of the GPU Companies are as follows:

Met-Ed	0.75
Penelec	2.19
Jersey Central	1.69

Restoration of TMI-1 costs to rates would also increase GPU's net income by about $50 million annually, or by approximately 80¢ per share, and its rate of return on common equity by 3.5 to 4 percentage points. GPU's return on equity for the 12 months ended August 31 was 1.6%, before extraordinary items that resulted in a loss. Prior to the accident, GPU's earnings ranged from $2.25 to $2.50 per share, representing a return on equity of about 10 to 11%.

Question:

17. What are the possible failure modes that could result in the release of the mobile fission product fraction to the environment? What probabilities are associated with these failure modes? How do these probabilities change with time?

Response:

Possible failure modes at TMI-2 which could result in release of fission products to the environment fall generally into the following categories:

1. Leakage, Spillage or Other Releases of Radioactive Liquids

   Examples of specific failure modes in this category include leakage from the containment sump, until the highly radioactive water therein is removed and processed, and failure of tanks or systems (and enclosing structures) used for collection and processing of radioactive water.

   The severity of any specific failure mode in this category is dependent upon the quantity and radionuclide concentration of the affected liquids. Therefore, as TMI-2 water processing proceeds, the radionuclide concentration of waste water is reduced and the consequence of liquid releases are greatly diminished.

2. Release of Airborne Gaseous or Particulate Radioactive Material

   The primary failure modes involved here are the failure of ventilation systems or other breaching of structures containing airbone radioactivity.

   At this point in the cleanup the quantities of airborne radioactive material are relatively low. However, certain future recovery activities, such as disassembly of reactor, have the potential for introduction of airborne contamination to plant structures. Design features are being developed to ensure that building atmospheres can be monitored and contained.

3. Release of Solid Radioactive Material

Since solids are generally immobile, this item presents an off-site environmental problem primarily in the event of an accident involving transportation of radioactive materials from TMI-2 to their ultimate disposal points. TMI-2 cleanup will involve more numerous shipments than in the case of a normal reactor plant and, therefore, the possibility of such an accident is somewhat higher. Considering the stringent transportation controls applicable to shipments from TMI-2 and elsewhere the consequences of any such accident are not expected to be significant.

4. The Dispersion of In-Plant Radioactive Materials to the Environment By Some Violent Force Such as Fire of Explosion

In general, TMI-2 cleanup does not involve use of explosive or especially flammable material and therefore, risk in this area is not considered high. Again, however, there are specific cases in which special attention has been or will be required. As an example, techniques and precautions are in place to protect against possible detonation of hydrogen generated in ion-exchangers temporarily stored on site.

The probability of failures in this category are dependent upon specific cleanup activities in progress at any given time. Some probability of such events will continue to exist as long as substantial amounts of radioactive material remain on the site.

5. Reactor Accidents

As long as fuel remains in the core, and particularly considering its uncertain geometry and the unavailability of normal reactivity control methods, TMI-2 is theoretically subject to a full range of nuclear accidents. Such accidents are far less likely than those in the four categories above, but hypothetically they involve greater consequences.

For this reason, reactor protection has been established as the highest priority activity at TMI-2. Core surveillance, maintenance of containment

> integrity, and installation and use of special systems for plant control have been continuing activities since the accident. Nonetheless, until the reactor is dismantled and the core removed, a finite probability of accidents in this category will exist.
>
> It is not clear whether the probability of such accidents increases or decreases with the passage of time. On the one hand, continuing degradation of plant equipment, including the Reactor Coolant System itself, is detrimental to plant control. On the other hand, as time passes, the core continues to cool and also accessibility to key plant areas for preventive and protective maintenance improves.

A number of specific, postulated accidents are evaluated in the PEIS* and the projected radionuclide releases associated with each were calculated and are summarized in PEIS Table 10.4.

The PEIS evaluation, however, is also limited to accidents attendant to cleanup itself and neither the probabilities of occurence nor the affects of cleanup schedule delay are addressed.

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*NUREG-0683, Final Programmatic Evnironmental Impact Statement related to decontamination and disposal of radioactive wastes resulting from March 28, 1979 accident, Three Mile Island Nuclear Station Unit 2, U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, March 1981.

Within GPU Nuclear (GPUN) a special Risk Assessment Task Force was established in March 1981 to systematically examine the full range of failure modes which could pose safety concern. This task force effort is proceeding using methodical, analytical techniques to identify risk conditions at TMI-2.

Regarding the calculation of numerical probabilities of specific failure modes and changes in these probabilities as a function of time, TMI-2 analyses completed to date and in progress generally yield relative and not absolute quantitiative conclusions. This is because true probabilistic risk assessment requires statistical experience with failure rates of similar components under similar conditions and knowledge about the chances of failure-initiating events.

In these respects, the unique conditions at TMI-2 preclude such quantitative calculations. It should be noted, however, that the factors which render TMI-2 failure probabilities incalculable (i.e., the relatively uncertain and unprecedented conditions in the plant) at the same time represent the greatest incentive to proceed expeditiously with cleanup. By all appearances, the TMI-2 reactor is stable; nonetheless, the basic ingredients for possibly severe releases of radioactive materials exist at TMI-2, are less controllable than in the case of a normal shutdown reactor plant and will remain so until cleanup is completed.

Question:

18. What are the potential environmental consequences associated with an additional delay in the cleanup of TMI?

Response:

The potential environmental consequences associated with additional delay in TMI-2 cleanup are two fold.

1. The increased probability of uncontrolled release of radioactive material, as addressed in the answer to Question 17, and
2. The likely increase in radiation exposure to workers.

With respect to uncontrolled releases, the consequences of postulated accidents should not be any greater at a later time. The chances that an uncontrolled release will occur is, of course, greater as time passes without any change of conditions.

The increase in radiation exposure would be manifested in two distinct periods. First, during a delay (i.e., that period of hiatus prior to commencement of cleanup), reactor plant control, surveillance, and maintenance activities must continue. Maintenance activities, in fact, will probably increase because of equipment degradation. Currently, all of these activities involve radiation exposure to plant workers. At present, monthly exposures to TMI-2 workers involved in operation and maintenance activities are about six man-rem. For as long as cleanup is delayed, TMI workers will continue to accumulate this exposure.

Secondly, it is anticipated that, with time, the material conditions of contaminated equipment, systems, and structures, etc., will continue to degrade. For example, surface contaminants are likely to become more adherent due to ongoing corrosion of metals, and absorption of contaminants into porous surfaces. Consequently, their removal will involve more difficulties, longer times, and higher worker exposures. Those mechanisms are impossible to quantify: They are expected to occur and will result in some, though probably not significant, increase in worker exposures.

To a limited extent, these increased environmental consequences associated with delay in cleanup would be offset by the natural radioactive decay in the fission products remaining. For example, Cesium and Strontium activity would be reduced to about half of the current levels in about 30 years, due to radioactive decay. Tritium would be similarly reduced in about 12 years. Thus, any delay of a few years for the purpose of decay is not warranted in terms of significant reduction (a factor of 2 or less) in the already minimal anticipated environmental impact.

In summary, delay a TMI-2 cleanup would not be expected to result in major additional environmental consequence. Nonetheless, with the passage of time, there is an increase in the possibility of uncontrolled release of radioactive material, as well as an assured incremental increase in radiation exposure to workers.

Question:

19. What are the expected environmental effects of the cleanup?

Response:

The PEIS, in aggregate, is a comprehensive evaluation of the projected environmental effects of the TMI-2 cleanup.

Important conclusions of the PEIS with respect to this question are:

1. The most significant environmental impact associated with the cleanup will result from the radiation does received by the entire work force from cleanup activities. Those doses are estimated to be in the range from 2000 to 8000 person-rem. It is predicted that less than one additional cancer death attributable to exposure to radiation will occur among the entire work force engaged in cleaning TMI-2. (The death rate from cancer among the U.S. population averages approximately 200 deaths per 1000 people). Not more than two additional genetic defects are expected in descendents of exposed workers. (Among the U.S. population, approximately 60 genetic defects can be expected per 1000 people.

2. Assuming the cleanup is conducted in accordance with the staff's proposed effluent criteria, the total cummulative radiation dose received by the entire population within a 50-mile radius of TMI-2 due to both gaseous and liquid releases would range from 10 to 30 person-rem for the entire cleanup. This is a small fraction (about .01 percent) of the background radiation dose received annually by the population from natural sources other than releases from TMI (annual population background radiation dose - 116 mrem/yr x 2.2 x 10^2 people = 255,000 person-rems).

The PEIS projections and cleanup planning are based on state-of-the art technology and therefore it is unlikely that the environmental effects have been misjudged. In summary, cleanup effects are expected to be very small.

WRITTEN RESPONSE TO SELECTED QUESTIONS

Mayor Robert Reid
Middletown, Penna.

Question 1. Money is the biggest problem of the clean-up of Three Mile Island. Many important projects vital to the clean-up had to be discontinued because of a lack of money. Many important technicans had to be terminated because of the lack of money. I would like to see a Federally guaranteed loan of one billion dollars given to GPU for the sole purpose of cleaning up Three Mile Island. This loan would be repaid by GPU, but not by future rate increases to customers.

The longer we take to clean up Three Mile Island, the greater the possibility of another accident--an accident worse than that which took place in March, 1979.

Question 2. The Federal Government should be lending assistance in the areas of technology and finance. Since the Federal Government is pushing nuclear energy as the source of power for the future and has complete control over nuclear energy, it should show the citizens of the United States it will stand behind nuclear energy no matter what happens.

The state government has little to do with nuclear energy because of the Constitution, but state government should be monitoring the plant at all times and be ready to lend any technical assistance it can.

The rate payer should not have to pay for the clean-up, but he should demand that the plant be cleaned up as safely and quickly as possible. The rate payer should also demand, as a citizen of the United States, that his health and welfare be protected as much as possible by the state and Federal Governments.

Question 4. I feel that if GPU cleans up Unit II and puts Unit I back on line, it will be providing electricity in this service area for a long time. The biggest hurdle that GPU must cope with is regaining the respectability that it lost because of the accident in March, 1979.

Question 5. Bankruptcy by GPU has been on the mind of many people in the area. The declaring of bankruptcy by GPU would be very alarming. Generally during bankruptcy proceedings investors come in and take over a bankrupt company, but what investor will buy out a crippled nuclear plant? GPU must remain solvent and continue to clean up Three Mile Island. When Unit I goes back on line, I'm sure GPU will remain solvent.

Question 11. Delay with the clean-up of Three Mile Island could cause a greater catastrophe than that which took place in March, 1979. The plant is now doing things it wasn't designed to do. I feel that any delays in getting it cleaned up will pose greater problems in the near future.

Question 12. According to the experts there will be no adverse effects from the clean-up. I feel that it's too early to know the effects. Maybe 10-15 years from now we'll see the effects of the clean-up. The delay in getting the plant cleaned up is having a telling effect on a number of the citizens living in the area.

QUESTIONS FOR NUCLEAR REGULATORY COMMISSION
CITIZENS ADVISORY BOARD

1. It would appear that the expeditious cleanup of the Three Mile Island site is in everyone's best interest. Do you believe that a prompt resolution of the financial uncertainties regarding the TMI cleanup is an essential first step in solving the cleanup problem? Please explain.

2. What is your view of the Federal, State, and ratepayer role and responsibility to the cleanup?

3. How do you currently rate GPU's ability to obtain credit in the capital markets?

4. What is GPU's future as long term provider of electricity in its service area?

5. What is the possibility of GPU bankruptcy, and what would be the impacts on:

    (a) the cost and reliability of continued service to GPU's customers;
    (b) the cleanup operation at the TMI site; and
    (c) the financial health of the electric utility industry?

6. How do the rates that are currently charged to GPU customers compare with those paid by customers of other electric utilities within Pennsylvania, and within other National Electric Reliability Council areas?

7. Compare the rate of increase of the rates charged to GPU customers from the March, 1979 accident to present with the increase in rates to:

    - other electric utility customers within the state, and
    - customers in other National Electric Reliability Council areas.

8. At the time of the March, 1979 accident, what fraction of electric ratepayers' disposable income was spent on electricity within:

    (a) the GPU service area;
    (b) Pennsylvania; and
    (c) each of the National Electric Reliability Council areas?

9. At the present time, what is the fraction of electric ratepayers' disposable income being spent on electricity within the areas listed in the previous question?

10. Summarize your group (agency) involvement in the TMI-2 cleanup.

11. What are the potential environmental consequences associated with an additional delay in the cleanup of TMI?

12. What are the expected environmental effects of the cleanup?

WRITTEN RESPONSE TO QUESTIONS

1. Refer to my attached testimony.

2. Refer to my attached testimony.

3. Very tenuous

4. I am not in a position to make a determination on this question.

5. Beyond the scope of the responsibility of the Advisory Panel on the Decontamination of Three Mile Island Unit II.

6. Beyond the scope of the responsibility of the Advisory Panel on the Decontamination of Three Mile Island Unit II.

7. Beyond the scope of the responsibility of the Advisory Panel on the Decontamination of Three Mile Island Unit II.

8. Beyond the scope of the responsibility of the Advisory Panel on the Decontamination of Three Mile Island Unit II.

9. Beyond the scope of the responsibility of the Advisory Panel on the Decontamination of Three Mile Island Unit II.

10. Our committee is an Advisory Panel on the Decontamination of Three Mile Island Unit II, to the Nuclear Regulatory Commission. As such, we have been involved in the removal of radioactive wastes that had been stored on Three Mile Island. The Island had become a storage site for such wastes and was causing great concern in the surrounding communities. We have heard testimony from citizens groups; Nuclear Regulatory Commission staff; Department of Energy staff; staff of Congressional Committees; General Public Utilities and Metropolitan Edison staff and others concerned with Three Mile Island Unit II.

11. The potential environmental consequences associated with an additional delay in the cleanup of Three Mile Island Unit II are the contamination of the Island and the surrounding area.

12. The expected environmental effects of the cleanup would be to restore the mental well-being of the citizens residing in the area and the removal of the potential threat of environmental pollution.

John E. Minnich, Chairman
Advisory Panel on the Decontamination
of Three Mile Island, Unit II

APPENDIX II

Additional Material Submitted for the Record

AMERICAN PUBLIC POWER ASSOCIATION
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President-elect JAMES E. BAKER
Vice President ROBERT L. McKINNEY
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LOMA W. HARTKE
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GORDON W. HOYT
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BEN HUFFSTODT
Princeton, Illinois
DICK KIRKHAM
Minnesota Municipal Utilities Association
Buffalo, Minnesota
JACK H. MADISON
Tillamook People's Utility District
Tillamook, Oregon
RICHARD E. MALON
Columbia, Missouri
ROBERT L. McKINNEY
Cowlitz County Public Utility District
Longview, Washington
JOHN S. McQUEEN
Chattanooga, Tennessee
WILLIAM MESCHER
Santee Cooper
Moncks Corner, South Carolina
ERNEST J. MULLEN
Kaukauna, Wisconsin
JOHN P. MUNNELLY
Omaha Public Power District
Omaha, Nebraska
PAUL J. NOLAN
Tacoma, Washington
PHILLIP C. OTNESS
Massachusetts Municipal
Wholesale Electric Company
Ludlow, Massachusetts
C. M. PERKINS
Salt River Project
Phoenix, Arizona
JAMES H. PHILLIPS
Sebring, Florida
GEORGE D. REICH
Plattsburgh, New York
HAROLD SCHIEBOUT
Sioux Center, Iowa
SIMON C. SITTERSON
Kinston, North Carolina
J. K. SPRUCE
San Antonio, Texas
GEORGE H. USRY
Athens, Tennessee
H. S. VANDERLINDEN
Harlan, Iowa
WILLIAM C. WALBRIDGE
Sacramento Municipal Utility District
Sacramento, California
ROBERT C. YOUNG
Burlington, Vermont

October 19, 1981

Honorable James McClure
Chairman
Energy & Natural Resources Committee
5229 Dirksen Building
Washington, D.C. 20510

Dear Senator McClure:

In connection with the October 20 hearing on the cleanup at the Three Mile Island nuclear power plant in Pennsylvania, I wish to apprise you of the views of the American Public Power Association, which represents 1,750 publicly owned electric utilities in 48 States, the Virgin Islands, Puerto Rico, Guam, and American Samoa.

On June 23, during the 1981 Annual Conference of the Association in San Francisco, the membership of APPA approved the attached resolution dealing with the financial implications of the Three Mile Island accident. Among other positions, you will note that the resolution declares that "individual utilities should not be compelled to collect dollar contributions from their consumers to finance the cleanup."

Recent statements by the top official of General Public Utilities, the holding company which controls the three subsidiaries owning the plant, indicate that the remaining cleanup costs at TMI-2 could be financed by an average 10 percent hike in rates of Metropolitan Edison, Pennsylvania Electric, and Jersey Central Power and Light. The chairman of GPU said just last month that "even if the full burden were laid on the company, the rates of GPU consumers would still not be out of line with the customers of other companies," according to the enclosed story in Energy Users Report. The cleanup of TMI-2 "is not the rate-making burden that some tended to think when we first addressed the issue," William Kuhns told the Pennsylvania Electric Association. Since the 1979 accident, the rates of Metropolitan Edison, the GPU subsidiary which operated the plant, have increased 55 percent, which Mr. Kuhns said was "not out of line with other utilities."

These statements raise serious questions as to why the consumers of public power systems -- who have experienced their own rate increases due to inflation and did not benefit from low-cost electricity produced by TMI prior to the accident -- should now be called upon to make cash contributions to GPU. Certainly there would be difficulties for mayors and utility managers attempting to explain to the city councils, utility boards, and citizens of the more than 2,200 communities with publicly owned electric systems why they should subsidize this large holding company.

Even if it were an equitable concept, there are legal impediments to forcing such payments.

As pointed out by municipal law expert Charles S. Rhyne in The Law of Local Government Operations, "Under state constitutions, state legislatures are generally denied the power to grant to a municipal corporation the authority to donate, or lend its money or credit to any individual, association, or corporation by stock subscription or otherwise." As constituent parts of political subdivisions affected by such prohibitions, public power systems would likely be legally prevented from giving money to a TMI cleanup fund.

Furthermore, if legislation were employed to reach the same objective, and a levy imposed on utilities, it could run afoul of the doctrine of inter-governmental immunity. Municipally owned electric utilities and other public power systems are units of local government established by the States, and as such could not be made subject to what might be construed as a Federal tax for the benefit of the owners of TMI-2 under Supreme Court decisions.

In addition to the resolution and the EUR article, you may find of interest the enclosed copy of a letter on the TMI-2 issue which I sent this Spring to Chairman Udall of the House Interior and Insular Affairs Committee.

I would appreciate it if my letter and the supporting documents could be included in the record of the October 20 hearing on TMI.

Sincerely,

Larry Hobart
Assistant Executive Director

LH:ep

Enclosures

THREE MILE ISLAND

WHEREAS, the American Public Power Association formed a special Task Force on the Financial Impact of Three Mile Island to recommend an Association position on utility financial issues growing out of the 1979 incident at the Three Mile Island nuclear power plant operated by a subsidiary of General Public Utilities Corporation in Pennsylvania, and

WHEREAS, the Task Force identified a series of TMI issues and positions which served as the basis for an APPA statement presented to the Subcommittee on Energy and Environment of the House Committee on Interior and Insular Affairs on May 5;

NOW, THEREFORE, BE IT RESOLVED: that the American Public Power Association endorses the views of the APPA Task Force on the Financial Impact of Three Mile Island as follows:

1. NRC holds a key role in determining the financial fate of General Public Utilities, and can aid the utility by (a) authorizing startup of the undamaged TMI-1 as it has allowed similar Babcock and Wilcox reactors to return to service following post-TMI corrective actions; (b) expediting regulatory actions relative to the cleanup at TMI-2; and (c) facilitating removal, transport, and storage of radioactive waste from the TMI plant.

2. Pennsylvania and New Jersey public service commissions should take appropriate regulatory action to (a) recognize the value of TMI-1 when it is placed in service and (b) permit rates adequate to cover cleanup costs at TMI-2.

3. Utilities could secure valuable "self insurance experience" by loaning personnel to GPU to aid in the TMI cleanup, and such action might mitigate risk

at all nuclear power plants and help lower insurance rates, but individual utilities should not be compelled to collect dollar contributions from their consumers to finance the cleanup.

4. The Department of Energy should provide "research and development" assistance to GPU with resultant information made available to utilities and the public, and DOE should help in the removal, transport, and storage of radioactive waste.

5. Private nuclear property damage insurance coverage should be expanded to the level of $500 million by commercial companies, who claim the capacity to do so, and this development should be coupled with a utility retrospective premium adjustment program which could assure an annual payout of a specified amount above that level in the event of a cleanup requirement in excess of $500 million. This approach would (a) make Federal legislation unnecessary and leave risk sharing in the non-Federal sector, (b) acknowledge the remote possibility of major accidents but provide a nuclear utility "safety net" in case of a catastrophic loss, and (c) protect consumers who may be served by a utility which suffers a future accident but without large insurance premium outlays.

6. Federal administrative or legislative action should be considered if it is necessary to mandate nuclear utility cooperation or override other obstacles to a prudent approach to protecting consumers against future utility property loss. A Federally prescribed property insurance program might be patterned on the existing Price-Anderson public liability program.

Nuclear Energy

GPU CHIEF SAYS 10 PERCENT RATE HIKE COULD PAY FOR REMAINING TMI CLEANUP

HERSHEY, Pa — (By a BNA Special Correspondent) — The remaining cleanup costs of Three Mile Island could be placed on electricity users with an average 10 percent hike in rates for the three TMI owners, according to William G. Kuhns, chairman of the General Public Utilities Corporation, parent company of the Metropolitan Edison Company, the Pennsylvania Electric Company, and Jersey Central Power and Light.

Kuhns told a news conference of the annual meeting of the Pennsylvania Electric Association that the cleanup of contaminated Unit 2 reactor "is not the rate-making burden that some tended to think when we first addressed the issue."

He said that over the next six years, the estimated cleanup completion time, rate filings now before regulatory agencies in Pennsylvania and New Jersey would provide enough revenues, plus $300 million in insurance, to cover the $1 billion cleanup project.

The regulatory agencies, to date, have resisted proposals for rate increases to clean up the facility, contending that ratepayers should not be assessed for this purpose, although there have been indications that the Pennsylvania Public Utility Commission is now split on this issue (EUR, August 27, 1981, p. 1332).

Kuhns said that "even if the full burden were laid on the company, the rate of our customers will not be out of line with customers of other companies."

He said customers of Met-Ed, 50 percent owner of TMI, would have to pay an increase of about 14 percent over present rates, while those of Penelec and Jersey Central, both 25 percent owners, would get a smaller increase, for an average of 10 percent for the three utilities.

Rate filings suspended for hearings by the Pennsylvania commission would give Met-Ed a 22 percent increase, and Penelec 15 percent. The Pennsylvania rate-setting agency on August 31 rejected by a 2-2 vote a staff recommendation that much less than the $212.1 million-a-year increase sought by Met-Ed and $125 million asked by Penelec, be approved without hearings and held the filings for reviews by the full commission. The filings would return the undamaged Unit 1 reactor at TMI to the rate bases of the utilities.

Since the 1979 accident, Met-Ed rates have increased 55 percent, which Kuhns said was "not out of line with other utilities." Had the accident not occurred, he added, rates would have gone up 35 percent over the time span.

In his speech to the meeting, the GPU chairman said that the electric utility industry "over the past decade has lost favor with the public" because of price increases. He urged utility executives to educate ratepayers about problems facing the industry.

In the Unit 2 cleanup process, which has been slowed down because of lack of funding, GPU has about $90 million in insurance money left. Under existing projections this money will be exhausted in 1983.

Although the restart of Unit 1 had been planned by the utilities for late December, a reopening of the Nuclear Regulatory Commission's Atomic Safety and Licensing Board hearings on safety and operational competence, because of cheating by control room operators in examinations, may further delay action by the Nuclear Regulatory Commission on the restart.

The TMI cleanup cost-sharing plan of Governor Richard L. Thornburgh, including a $192 million contribution from the country's electric utilities, and aid from federal and state governments, was approved September 10 by the board of directors of the Edison Electric Institute.

Nuclear Energy

PENNSYLVANIA PROPOSAL FOR FINANCING TMI CLEANUP DRAWS FIRE OF HOUSE PANEL

Pennsylvania Governor Richard L. Thornburgh's proposal to finance the cleanup of Three Mile Island elicited some tough questions and little enthusiasm when he explained it September 22 to members of a House subcommittee.

Much of the criticism by members of the House Energy Conservation and Power Subcommittee centered on Thornburgh's call for the Federal Government to put up $190 million over a six-year period toward cleaning up Three Mile Island.

Total cleanup costs may run over $1 billion, including some expenses covered by insurance, according to an estimate by the General Accounting Office.

Representative Richard L. Ottinger (D-NY), the subcommittee's chairman, told Thornburgh that with the Reagan Administration's emphasis on budget austerity, an appeal for federal funding "is a very real difficulty."

Representative Edward J. Markey (D-Mass) said he had "very serious doubts as to whether any federal money will be spent on this bailout at all."

Representative Phil Gramm (D-Texas) was even blunter when he called attention to Thornburgh's proposal to use money appropriated for the Energy Department's research and development budget to cover Three Mile Island costs. "In two years you won't even find a Department of Energy to get the money," he said. "Quite frankly I don't think the $190 million at this point is feasible."

After hearing the criticism of his proposal, Thornburgh conceded that he had an uphill battle to wage in convincing Congress. "I appear to be asserting a definite minority view," he said.

Shared Expenses

Besides the federal money, Thornburgh's plan calls for U.S. electric utilities to provide $190 million, with another $245 million to come from General Public Utilities Corporation, owner of Three Mile Island. The utilities would apparently collect the cleanup money by assessing their ratepayers. In addition, the state governments of New Jersey and Pennsylvania would each pay $45 million, and another $90 million would come from unexpended insurance funds.

The governor announced his cost-sharing plan in July after consulting for months with executives of banks, insurance companies, utilities, and other industry experts. It was recently endorsed by the Edison Electric Institute, which represents investor-owned utilities (EUR, September 17, 1981, p. 1419).

"It's not as if we're seeking a federal bailout," Thornburgh said. "We're simply calling on the Federal Government to match its shared responsibility for the development, use, and regulation of nuclear power with a shared commitment to resolving the most serious problem those activities ever dumped in the laps of unsuspecting Americans."

Thornburgh said a federal role in helping pay for cleaning up Three Mile Island would restore investor confidence in the electric utility industry, thereby reducing borrowing costs that would otherwise be imposed on all utilities if the

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May 8, 1981

Honorable Morris K. Udall
Chairman, Committee on Interior
and Insular Affairs
U.S. House of Representatives
1324 Longworth Office Building
Washington, D.C. 20515

Dear Chairman Udall:

I appreciated the opportunity to testify on May 5 on the financial implications of the accident at Three Mile Island. Reviewing the remarks of witnesses, the following observations occurred to me:

1. Testimony at the May 4-5 hearings revealed some ignorance about the economic history of private power companies in the U.S. For instance, J. Hugh Devlin of Morgan Stanley stated in his prepared statement:

> "To date, utilities have been able to reassure investors by the fact that, in modern history, there has never been a bankruptcy of a major utility in the U.S. for any reason -- let alone for an accident whose cause is not certain."

A representative of L. Rothschild, Unterberg, Towbin filed testimony which said in part:

> "...it has long been an article of faith among creditors that regulated utility companies, charged with serving the public, would never be allowed, much less prodded, to walk the gang plank. It has been assumed that a regulated environment provides greater protection against bankruptcy than the world of unbridled competition where greater business risks are offset by higher return expectations."

However, the position presented to the subcommittee by consumer and environmental groups included a footnote which pointed out that:

> "Congress should not forget that GPU originated from the bankruptcy of its corporate predecessor, Associated Gas and Electric Company (Ageco) in the early 1940's. (For some background on the amazing history of Ageco and its many corporate cousins, see Business Week, December 8, 1945, pp. 68-72, and Fortune, December 1945, pp. 165 ff.) Fortune described the ultimate outcome of the Ageco bankruptcy, the creation of a new holding company, GPU: "Thoroughly scrubbed, steamed, and massaged, Associated emerges from bankruptcy healthier than ever before--the pride of the SEC, the joy of Wall Street, and the hope of the creditors who have taken it over lock, stock, and bus bar." While we do not claim that all bankruptcies lead to such salutary results, this bit of history does suggest that Congress knew what it was doing when it created the bankruptcy process as the mechanism to deal with troubled private enterprises."

One of the reasons that bankruptcies may be infrequent among power companies is the fact that mergers and acquisitions have absorbed the weaker utilities. The number of private power companies in the United States has steadily decreased over the years, as is indicated by the following figures provided by the Federal Power Commission and McGraw-Hill:

1927	1937	1947	1957	1968	1980
2,135	1,401	858	465	405	302

This trend toward concentration of control of private power companies, which is continuing, has not resulted in disruption of electric services.

2. There was also testimony in the hearings that the situation faced by the General Public Utilities is a one-of-a-kind problem. For instance, the Edison Electric Institute testified in a burst of redundancy that:

> "The TMI accident is unique and unprecedented."

Actually, there is a close parallel to TMI in the history of the Enrico Fermi plant of Detroit Edison.

Enrico Fermi No. 1 was a 60 megawatt breeder reactor constructed for commercial power purposes on the system of Detroit Edison. In 1955, when the project was launched, the cost estimate was $40 million. The Atomic Energy Commission issued a construction permit for the plant in 1956, and it was licensed by AEC for operation in 1963 with full power approval granted in 1965. In 1966, at a time when available commercial nuclear property damage insurance totalled $74 million, the reactor was involved in a major fuel meltdown. It was shut down for repairs from 1966 to 1970. In 1971, Detroit Edison sought Federal and utility money to help put the project back on line as a power producer. However, the requisite financial help was not forthcoming. In 1972, the plant was closed after an investment of $133 million--a large sunk cost for a utility in the days before double-digit inflation-- and decommissioning and economic write-offs were undertaken.

Certainly there are differences between Enrico Fermi and TMI-2. Nevertheless, the similarities are striking. And it is perhaps pertinent to note that Detroit Edison did not go broke.

3. Testimony in the two days of hearings also pointed up that as far as the TMI accident itself is concerned, resources are potentially available to cover costs, if state commissions acquiesce. As William Kuhns, chairman of General Public Utilities, stated:

"If GPU customers were fully burdened with the cost of the cleanup and restoration of near term financial viability, the average increase would be 14% for Met-Ed, 16% for Penelec and 5% for Jersey Central above rates that reflect the rate increases granted or recommended by the PaPUC and the NJBPU in April, 1981."

Robert Gillham of New York's Chemical Bank observed that: The plain fact is that GPU ratepayers in Pennsylvania still pay considerably less than ratepayers in many other regions of the country. Indeed, there are other ratepayers in Pennsylvania who pay more than Met Ed ratepayers."

In New Jersey, GPU rates have gone up $378 million over 1979 levels but an estimated $300 million is not related to the accident, according to the New Jersey Board of Public Utilities. "The rates of Jersey Central Power & Light customers are still not the highest in the land," Board President George Barbour testified.

"On a system-wide basis rates have increased 50% since the accident." Mr. Kuhns reported. "We estimate rate increases of 35% would have been required had there been no accident."

In addition to the possibility of relatively small rate increases which could pay for TMI cleanup and still keep GPU rates competitive, the company is currently aided by special rates which it pays for wholesale power to replace that lost at TMI. The Federal Energy Regulatory Commission has accepted a settlement agreement reached by GPU and other member utilities of the Pennsylvania-New Jersey-Maryland (PJM) power pool. The agreement allows GPU to purchase replacement power to cover generating losses resulting from its two TMI units at rates below the level it would normally pay under the PJM split-the-savings rate schedule. In other words, consumers of other pool members are paying more for power so that GPU consumers can pay less.

Another possible ultimate source of funds for GPU is the Babcock & Wilcox Company: GPU is suing it for $1 billion charging that the TMI accident was due to deficiencies in the equipment, failure to train properly plant personnel, and neglect in correcting operating procedures after a similar accident at the Davis-Besse nuclear project.

4. The financial community which helps raise money for electric utilities has cited "investor confidence" as an important TMI-related issue. J. Hugh Devlin of Morgan Stanley reported that increasingly "we see investors focusing on the exposure of utilities with existing nuclear units." Availability of adequate property damage insurance could eliminate that risk. There is a clear need for expanded financial protection for nuclear power plant property damage. Use of a utility retrospective premium adjustment on top of increased commercial insurance could fill the need at least cost to consumers. For instance, if the insurance companies come up with such premium adjustment. The program could work like this:

If an accident occurred and damage exceeded $500 million, the owners of the 75 reactors with operating licenses would then pay their pro-rata share per reactor up to an annual limit of $2 million per accident. This would produce a cash flow of up to $150 million a year. "It has been estimated that given all of the necessary regulatory approvals and money, the cleanup at TMI will not be able to proceed at an annual rate exceeding $150 million," Representative Allen Ertel has stated. Hence, this sum would be adequate to deal with TMI-type problems up to the ceiling of $1 billion.

One of the advantages of this approach is that consumers would not have to pay out money each year even though no accident exceeding $500 million had taken place, although in the event of such an accident all nuclear utilities would be required to pay as a condition of the policy. Thus, if no major accident took place for a period of 10 years, consumers of the owners of the 75 reactors would save a total of $1.5 billion.

This approach could (a) make Federal legislation unnecessary and leave risk sharing in the non-Federal sector, (b) acknowledge the remote possibility of major accidents but provide a nuclear utility "safety net" in case of a catastrophic loss, and (c) protect consumers who may be served by a utility which suffers a future accident but without large insurance premium outlays.

Sincerely,

Larry Hobart
Assistant Executive Director

LH:cl

Public Citizen

STATEMENT OF HARVEY ROSENFIELD

STAFF ATTORNEY, CONGRESS WATCH

BEFORE THE

COMMITTEE ON ENERGY & NATURAL RESOURCES

AND THE SUBCOMMITTEE ON

NUCLEAR REGULATION OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ON

FINANCIAL, HEALTH AND SAFETY ISSUES RELATED TO THE CLEAN-UP OF THE ACCIDENT AT THREE MILE ISLAND

October 20, 1981

CONGRESS WATCH • 215 PENNSYLVANIA AVENUE, S.E., WASHINGTON, D.C. 20003 • (202) 546-4996

Mr. Chairman, members of the Committees:

My name is Harvey Rosenfield. I am a staff attorney at Congress Watch, the advocacy arm of Public Citizen, a consumer organization with over 60,000 members.

Thank you for the opportunity to appear here today to address the question of the role of the federal government in the clean-up of the nuclear accident at Three Mile Island, Pennsylvania.

Mr. Chairman, there are four principles which we suggest should guide the Committees in their consideration of the issue of what to do about the continuing problems at Three Mile Island:

(1) The nuclear industry should be required to conform to the free market economic principles under which every other business in the United States must operate.

This principle may not seem novel, but the commercial nuclear industry in this country, now 27 years old, has yet to stand on its own two feet in the marketplace. Over $37 billion of the taxpayers' money has been expended by the federal government over the last three decades to prop up the industry, according to one estimate.[1] And this figure does not even include the enormous subsidy provided the nuclear industry by the Price Anderson Act[2], which absolves the nuclear industry of legal liability for its activities.

It is doubtful that federal subsidization of nuclear power ever made sense; but it is manifestly inappropriate now, when the increasingly recognized dangers of atomic energy and the availability of economically and environmentally superior alternatives have combined to make nuclear power an unacceptable and unnecessary option for this nation.

Particularly in light of the severereductions in federal programs made by the Congress in recent months, federal subsidization of mismanaged or impaired corporations is unwarranted.

(2) The federal bankruptcy laws are the U.S. Congress' expression of public policy with respect to failing or failed businesses. Deviation from the prescribed formula for corporate responsibility and dissolution should not be countenanced absent the most compelling of reasons.

Every business in this nation enters commerce with the knowledge that it may succeed or fail. Congress has provided that failure means bankruptcy, a condition which is governed by statutes passed by the Congress, most recently in 1978.[3] In 1975, 35,201 businesses went bankrupt, without the opportunity to obtain special consideration in Congress.

Exceptions have been made in a few instances from these "rules of the game." It is arguable that the circumstances in those cases fell far short of those compelling enough to justify a special exemption from applicable laws, and the loss of respect for lawmaking that that entails.

If utilities in the United States require special treatment under the bankruptcy laws, in order to protect the public health and safety, then that treatment should be addressed by the appropriate committees of the Congress pursuant to established legislative procedures, not with special legislative remedies made on a piecemeal basis.

(3) The appropriate role of the committees of the Congress is to ensure that the NRC and its licensees are discharging their statutory responsibilities, particularly with respect to the public health and safety, in the most efficacious and expeditious manner possible.

That a utility may become financially insolvent should not be, in itself, of concern to the Committees, except as it may affect the considerations enumerated above.

(4) Questions of insurance in the context of the accident at Three Mile Island or nuclear power generally cannot be addressed apart from the Price-Anderson Act.

The Price-Anderson Act mandates that the maximum amount of insurance available from insurers be provided to protect the public against its losses in the event of a nuclear accident, losses the compensation for which is otherwise greatly limited by the Act. Efforts to increase utility property insurance, whether by creation of a federally supported insurance pool or by the industry, immediately raise extremely serious questions with respect to concomitant protection for citizens and compliance with Price-Anderson requirements.

Application of these principles requires a discussion of the situation at Three Mile Island.

Status of Three Mile Island

While the specifics of the situation at Three Mile Island vary according to which experts are asked and can be better addressed by other witnesses, generally the crippled reactor is characterized as posing a "potential" hazard but no imminent threat to the public health and safety. There is unanimous agreement, though, that (1) the clean-up must be done with extreme caution but as expeditiously as possible, and (2) the clean-up can and should proceed faster than it has so far. Indeed, General Public Utilities (GPU) budgeted approximately $50 million in 1981 for the clean-up; this was largely to maintain the status quo. Most of GPU's clean-up activities have been paid for by its property insurance of $300 million. This coverage is expected by GPU to run out in late 1983.

The actual clean-up of the March 1979 accident at Three Mile Island only began less than one month ago, with the cleansing of 10,000 gallons of highly radioactive water -- reducing the level of the 600,000 gallons sitting at the bottom of the Unit 2 containment building by about two inches.[4]

While experts generally agree that the decontamination and clean-up of the reactor is within the technical competence of industry working with regulatory officials, there remains a significant threat of further emissions to the biosphere, particularly through leakage of radioactive water into the ground.[5]

Of equal concern is maintenance of the reactor in its "cold shutdown" mode: instrumentation which monitors and controls the core may have been "degraded" by the accident and resulting contamination of the vessel. Though the utility and the NRC officially believe Unit 2 will eventually be returned to service, it appears likely that the facility has been damaged beyond repair.[6]

Unit 1, which had begun regular operation five years prior to the accident, was shut down thereafter and remains non-operative pending an NRC decision on whether the design problems which led to the accident at Unit 2 have been corrected in Unit 1. A letter from Representative Morris Udall, Chairman of the House Committee on Interior and Insular Affairs, to Pennsylvania Governor Thornburgh, suggests that resistance by GPU to certain NRC requirements with respect to Unit 1 may cause further delays in its restart.[7] Hearings were held last week on the competence of GPU management to run Three Mile Island, particularly at issue because of recent allegations of improprieties in personnel training and testing.[8]

Financial Status, GPU.

A true assessment of the financial status of GPU and its subsidiaries awaits a comprehensive and objective analysis by financial and utility experts. No such analysis has yet been performed, and it is important to note that the financial studies and reports upon which much of GPU's assertions have been based have been commissioned or written by those with an interest in presenting the worst possible financial situation -- the best possible case for immediate federal aid -- to the Congress.

There is, nevertheless, enough information on the record to justify our conclusion that (1) GPU is not in imminent threat of demise, rendering discussion of "bankruptcy" premature and needlessly alarming, and (2) most certainly not in need of federal intervention.

There is no question that the financial picture for GPU is not bright:

-- The cost of the accident at Three Mile Island has been put at $1.2 billion in clean-up and decontamination costs; this figure, itself 100% higher than initial estimates, is in all probability conservative.

-- The crippled Unit 2, worth $742 million, probably can be considered a loss, though the Kemeny Commission optimistically assumed it would return to service in 1985.

-- Failure to pay dividends on its common stock has resulted in a plunge in the market price of GPU shares to 18% of book value; as a result, GPU has lost its access to the capital markets.

-- GPU's 1980 net operating income dropped to $21 million.

But it should be pointed out that GPU's problems do not arise solely from Three Mile Island.

The utility has exhibited poor, though hardly atypical, judgement in projecting future energy needs[9] and sought to meet this overanticipated demand through construction of expensive, centralized nuclear capacity.

Moreover, the source of GPU's current troubles, the accident at Unit 2, was not an anomaly "imposed upon" GPU as if the utility was a victim of "bad luck." There is substantial evidence that GPU mismanaged construction and operation of its nuclear facilities: both the Kemeny Commission and Rogovin reports on the accident note serious deficiencies in GPU's nuclear program management and operation.[10]

Indicative of the utility's lack of concern for the technology it had undertaken to utilize is the astonishing statement by William Kuhns, the Chairman of GPU, that the utility had been, essentially, surprised by the accident, notwithstanding dozens of smaller accidents at other plants and years of controversy about the safety of nuclear power:

> Had the nuclear establishment, the government, the utility industry, the vendors and the regulators, anticipated that an accident of this magnitude and cost could occur, the industry would have put an insurance program in place.[11]

The point is that Metropolitan Edison, the licensee, and GPU, the holding company, are primarily to blame for the position these entities find themselves in today.

But notwithstanding its difficult financial straits, GPU is by no means about to collapse. The utility is an operating enterprise with assets of $5.075 billion,[12] far in excess of the costs of the clean-up. The company's major problem is obviously its cash-flow, almost by definition short-term in nature. A brief analysis of GPU's financial environment suggests that the company has the wherewithal to finance the expeditious and safe clean-up of Three Mile Island.

--1980 revenues for the GPU system were approximately $1.83 billion ($430 million attributable to Metropolitan Edison; $520 million to Penelec; $880 to Jersey Central).[13] Its operating income for 1980, including funds for construction-work-in-progress (CWIP), was $260 million.[14]

--A rate increase granted by the Pennsylvania PUC on April 1 provides for additional annual revenues of $106.7 million.

--A revolving credit agreement (RCA) (the RCA "revolves in that monies may be continuously borrowed, repaid and borrowed subject to the conditions of the original agreement but without further approval) of $412 million was established after the accident by a consortioum of 45 banks. Aggregate borrowing by the GPU group was limited to $292 million absent consent of banks holding 85% of the total commitment. The agreement expired on October 1 of this year. It was re-negotiated with a limit of $200 million. Presently, $118 million of the total is outstanding.[15]

--Approximately $80 million remains of the $300 million available to the utility from its property insurance.[16]

--GPU has continued to pay dividends and make sinking fund payments to preferred stockholders, interest and sinking fund payments to bondholders, and interest on bank loans. For the period August 1979 to August 1980, the GPU companies paid a total of $271,557,000 for these purposes.[17] While shareholders have paid interest costs on borrowing to pay for the clean-up (approximately $11.2 million on interest in 1979-1980), shareholders have not paid for the clean-up directly.[18]

--GPU continues to pay state and local taxes; the state of Pennsylvania has received a windfall of approximately $20 million from from a gross receipts tax on the increased revenues GPU has obtained as a result of passing through the higher costs of replacement power. Ratepayers pay the tax.[19]

- --The company may recover a significant portion of the costs of the accident in a suit GPU filed against Babcock and Wilcox, the manufacturers of the nuclear steam supply system and other equipment utilized at Three Mile Island Unit 2.[20]

- --GPU anticipates a $3.5 billion construction program between 1981 and 1986,[21] based upon an increase in net system requirements from the current 31,838,043 MWh to 40,920,000 MWh--a 32% increase.[22] This figure includes construction by Jersey Central of a hydo-project, conversion of two oil-fired plants to coal, and refinancing requirements. Approximately $2.4 billion will be available, internally, through depreciation, tax deferrals and collection of deferred energy, for this program according to GPU calculations.[23] GPU's projections assume a continuation of post-Three Mile Island rate structures.

The data noted above suggest that hundreds of million of dollars are potentially available to GPU for the clean-up of Three Mile Island Unit 2 through a serious effort to comprehensively re-analyze GPU's needs and renegotiate its financial responsibilities with its creditors, investers and with supervising governmental agencies such as the public utilities commissions.

Among options which should be explored are:

- --Reduction or temporary elimination ofdividend and sinking fund payments to bond and preferred stock holders;

- --postponement or forgiving of state and local taxes, and rebate to GPU of Pennsylvania gross receipts tax revenues;

- --increase in the short-term credit available to GPU and deferral of interest payments;

- --deferral of the company's capital construction programs and implementation of less costly conservation and load reduction programs, such as recommended by the Pennsylvania PUC to the state's utilities;

- --increases in rate relief requiring ratepayers to bear at least a portion of the costs of the clean-up.

- --Writing off Unit 2.

- --Assistance from the manufacturer of the crippled facility, Babcock and Wilcox.

A Deadly Game of Chicken.

The determination of financial measures which would ensure a speedy and safe clean-up of Three Mile Island obviously requires detailed analyses by experts in business management, securities, economics and energy. The possibilities mentioned above are meant to indicate only that there are a wide range of options remaining open to the management of GPU, its ratepayers and officials with direct responsibility for the facility, rendering it unnecessary for Congress even to contemplate any action at this time.

There is no mystery as to why General Public Utilities, the Governor of Pennsylvania, and the Pennsylvania PUC have painted such a dim picture of the status of Three Mile Island and GPU.

The utility is trying to protect itself from the heavy financial burden of cleaning up the mess at Three Mile Island, one which will most certainly injure its ability to make a profit for the foreseeable future.

The Pennsylvania PUC finds itself faced with the decision whether to inflict the full costs of the accident upon GPU's customers -- the ratepayers. It would like to spread the financial burdens of Three Mile Island as widely as possible.

Governor Thornburgh, as well as the elected officials of the stricken area, are charged with the duty of ensuring the health and safety -- as well as the financial well-being -- of citizens of the area. They, of course, wish to have the threat to the population eliminated as quickly as possible. With no power to order the utility to speed the clean-up, an appeal to broader constituencies is a natural alternative.

The problem, however, is that the company, its lenders and creditors, the PUC and to some degree the state are engaged in an eyeball to eyeball game of chicken to see who will act first. All have much to lose if nobody acts.

It was the PUC which blinked first, in April, with a rate increase ten times what its staff had suggested, and more than two-thirds of the amount requested. The company's banks had refused to extend the short-term credit necessary for GPU to meet a debt approaching due -- a $23 million state tax bill -- unless the PUC granted a rate increase. Once the PUC responded, the banks provided the necessary funds.[24]

And the nuclear industry, which itself has much to gain by a quick clean-up of this monumental embarassment, has lately agreed to some financial responsibility for the clean-up -- but only if the federal government lends monetary support too.

Indeed, the hope among most of the interested parties is that ultimately Washington will blink, in a major way. The recent Chrysler bailout provides a precedent for the campaign being mounted here on Capitol Hill to have the hapless taxpayers become the deep pocket of last resort for GPU.

While the wait continues for a response from Washington, the clean-up has fallen into what is essentially a holding pattern.

Federal Taxpayers and Other Ratepayers Should Not Bear the Costs of Cleaning Up Three Mile Island

Who should pay for the billion-dollar-plus decontamination, clean-up, and decommissioning of Three Mile Island? Applying the principles set forth above, it is clear that proposals which would force taxpayers or other ratepayers to pay the bill, either directly or indirectly, should be rejected. Analysis suggests that the company and its creditors and stockholders should be primarily responsible, followed by the ratepayers, the nuclear industry, and, as a last resort, only in the event of a serious emergency, non-GPU ratepayers and federal taxpayers.

The company and those who have invested in it or extended it credit, hoping that their risk would be rewarded monetarily, should be considered immediately and primarily responsible for remedying the situation at Three Mile Island.

A great deal of time and effort have been properly expended determining how the accident could have been avoided. Improvements in NRC regulation, industry practices, and federal, state and local cooperation, have been suggested. But the bottom line is that this was no Act of God, it was a failure to properly construct and operate a piece of complex and little understood technology. GPU gambled on the purchase of an expensive asset--a nuclear reactor--and lost. The owners of the facility, the shareholders, should be required to sacrifice their profits--and their ownership position, if necessary--before others are called on to pay.

The utility's ratepayers had the benefit of electricity generated by TMI Units 1 and 2. They would have paid the expenses of operating and maintaining the facility, its capital costs, and most pertinent, the cost of decommissioning the plant at the end of its useful life. There is every reason to assume that eventual decommissioning would have been even more expensive than the present estimated clean-up costs.

As between federal taxpayers, ratepayers across the nation and GPU's customers, it is clear that the latter have a greater responsibility for the clean-up of Unit 2.

The nuclear industry's role in financing the clean-up could be viewed as a matter of conscience, though behind recent (conditional) offers of assistance is enlightened self-interest: a desire to erase as quickly as possible a major public relations disaster.

But if, as representatives of the industry are fond of saying lately, Three Mile Island should be viewed as some kind of "learning experience" for nuclear power, a "unique 'R&D' opportunity," then industry, not the taxpayer, should foot the bill. If, indeed, the cost of cleaning up a nuclear accident is an important step in the development of nuclear power, utilities should have no problem passing their contributions on to their ratepayers.[25]

THE FEDERAL ROLE

A variety of legislation has been introduced which would require some form of federal support for GPU. But all the legislation violates the four principles enumerated above.

The Thornburgh Plan

Pennsylvania Governor Richard Thornburgh's plan is a straight-forward federal bailout of GPU. Under his approach, the federal government and the nuclear industry would each contribute $190 million -- 25% of the estimated $760 million to be raised -- over the next six years for the clean-up; GPU would pay $245 million -- 32% of the clean-up cost -- and the states of Pennsylvania and New Jersey the relatively small sums of $30 million and $15 million, respectively. Aside from the obvious problems raised by the federal subsidization, the Governor's plan also requires the restart of Unit 1, which has been out of service since before the accident and continues to present a safety problem, as previously noted.

S.1606

The indirect federal assistance proposed by the Nuclear Property Insurance Act of 1981 (S.1606), represents no less of a federal bailout than cash grants to GPU.

S.1606 requires the Secretary of Energy to provide at least $2 billion in property insurance to nuclear facilities, which must carry the insurance in order to be licensed.

Premiums of not less than $150 million per year would be charged all nuclear facilities until a fund of $750 million -- or some other amount determined by the Secretary to be "actuarially sound" -- is established. The Secretary would be required to assess each licensee an additional sum should the reserve be insufficient to cover the full property costs of an accident.

The concept of additional property insurance is hardly novel; indeed, the industry has already established a $2 million per week replacement power insurance pool,[26] and the consortium of insurance companies which write nuclear insurance have undertaken to increase the amount of property insurance it makes available from $300 to $1 billion. (The insurers in fact disapprove of the federal insurance proposals.)[27] If the industry is voluntarily enlarging its insurance coverage already, why the need for a federally organized, mandatory property insurance program for nuclear utilities?

Because S.1606 makes the plan retroactive to Three Mile Island. It would pay 75% of the costs of the clean-up incurred after the Act is passed. GPU would be required to pay 50% of the funds back. The plan amounts to a federally funded loan from utilities of 37.5% of the clean-up costs and a grant from utilities of 37.5% of the costs.

Thus, under S.1606, the federal government would require all nuclear facilities in the United States to subsidize the Three Mile Island clean-up. If state agencies allow the costs to be passed-through by utilities, ratepayers all over the United States would end up paying the bill for Three Mile Island.

Rep. Allen Ertel (D.-Pa.) who has introduced a nearly identical bill in the House (H.R. 2512), calculates the additional cost to consumers of the regime at 3¢/month in a 500 KWh bill. (Unlike S.1606, H.R. 2512 would "spin-off" the federal insurance company to a private firm after Three Mile Island has been cleaned up or when the $750 million reserve has been established -- whichever comes first.)

Federal assistance, whether it be through direct grants couched in euphemisms like "R&D expenditures," loans, loan guarantees, or mandatory retroactive insurance programs, unequivocably commits taxpayers to adopt the costs and risks of a nuclear accident -- after the fact.

The appropriate role of the federal government is to supervise the efficacious and expeditious clean-up of Three Mile Island Unit 2, through its appointed agency, the NRC, which is entrusted with ensuring the public health and safety.

We do not subscribe to the position that there should be a retrenchment from federalism in general or federal health or safety regulation in particular. The federal government should be prepared to assume responsibility for Three Mile Island in the event the facility becomes a threat to the health, safety and welfare of the public and the company and state officials are unable to act. But that point has not been reached, and need not be reached, as discussed above.

Bankruptcy

The potential insolvency of GPU has been bandied about by GPU, its creditors, and federal, state, and local officials in order to goad Congress into action. They almost always link bankruptcy with dire consequences, including a severe threat to the public health and safety.

As we noted previously, there are a variety of methods by which GPU can, and should, rearrange its finances in order to quickly clean up Three Mile Island. Nevertheless, it is important to address the subject, because bankruptcy -- not federal assistance -- is the congressionally approved method of administering a failed corporation so as to maximize the protection of the interests of all parties.

Without question, bankruptcy would have serious consequences. The administrative costs would be considerable, and thousands of shareholders and creditors would be harmed. The capital markets would clearly react adversely in the short term.[28]

but bankruptcy has many advantages. It would allow for a reorganization of GPU, for example, enabling the holding company to sell off its successful subsidiaries and recover its schedule of debt repayment, generating cash for clean-up of TMI and operation of other Pennsylvania capacity. Sale of Jersey Central Power and Light, with assets valued at $2.1 billion, would be sufficient to cover the TMI-2 costs.

Though liquidation would have a more severe impact, it would not necessarily jeopardize the clean-up: its cost could be viewed as an administrative or operating expense, to be paid before other senior creditors were compensated. Or the NRC might be considered a creditor with the highest priority by the bankruptcy court. Whether the law is applied in this way depends upon the court's interpretation of the Bankruptcy Reform Act of 1978, which has not yet been applied to the unique situation of a utility bankruptcy, where there is a substantive public stake in the outcome.[29]

Once again, this brief treatment of bankruptcy is meant to indicate that there is no legitimate reason to reject bankruptcy as a major option for GPU. Indeed, those who would seek a special legislative exemption from the bankruptcy laws should be forced to sustain a tremendous burden of proof as to the justification for it. None of the parties appearing here today in support of a detour around the bankruptcy laws have even begun to meet that burden of proof.

And if, indeed, the utility sector is a special case in that the current bankruptcy law insufficiently protects the public health and safety, we suggest that Congress move to amend the bankruptcy law, perhaps by specifying that clean-up costs are a super-priority in the event a nuclear utility files under one of the chapters of the Bankruptcy Code.

Finally, we believe that a clear message from Congress that it does not intend to bailout the parties involved will spur the parties into a serious effort to keep GPU solvent and able to proceed expeditiously with the clean-up.

THE PRICE ANDERSON ACT

If nothing else, recent legislative forays into the financial situation at TMI have demonstrated the gross inequity of the Price Anderson Act, the federal law enacted in 1957 which limits the liability of the nuclear industry in the event of an accident.

Supposedly "in exchange" for absolving the nuclear industry of virtually all legal responsibility for its actions, the Price Anderson Act established a $560 million fund for the compensation of victims of an accident. Monies for the fund would come from three sources:

1. Privately-written Liability Insurance. Two worldwide consortia of insurance companies have been established to provide liability insurance for protection of the public. The Price Anderson Act requires licencees to purchase all available liability insurance (thus, homeowners or businesses cannot purchase nuclear insurance protection), the exact amount to be determined by the NRC (§ 2210 (b)). Its most recent determination found $160 million to be commercially available.

2. Retroactive Assessments. The Price Anderson Act requires that, in the event of an accident exhausting the initial layer of compensation--the private liability insurance--each nuclear licensee in the nation is to be assessed $5 million per licensed reactor. The current 72 operational reactors would thus provide $360 million for the fund.

3. Federal Indemnity. The difference between the monies available from the first two tiers and the $560 million limit is to be made up by the federal government. Presently, the government is obligated for $40 million. ($160 + $360 = $520; $560 - $520 = $40).

The $560 million was acknowledged--at the time--as being too little to cover a serious accident.[30]

It is clear from the startling cost of the TMI accident--which has come nowhere near the level of a major nuclear accident--that the Price Anderson Act provides no real protection to the public.

Moreover, the federal legislation under consideration today would render the Price Anderson Act a mockery.

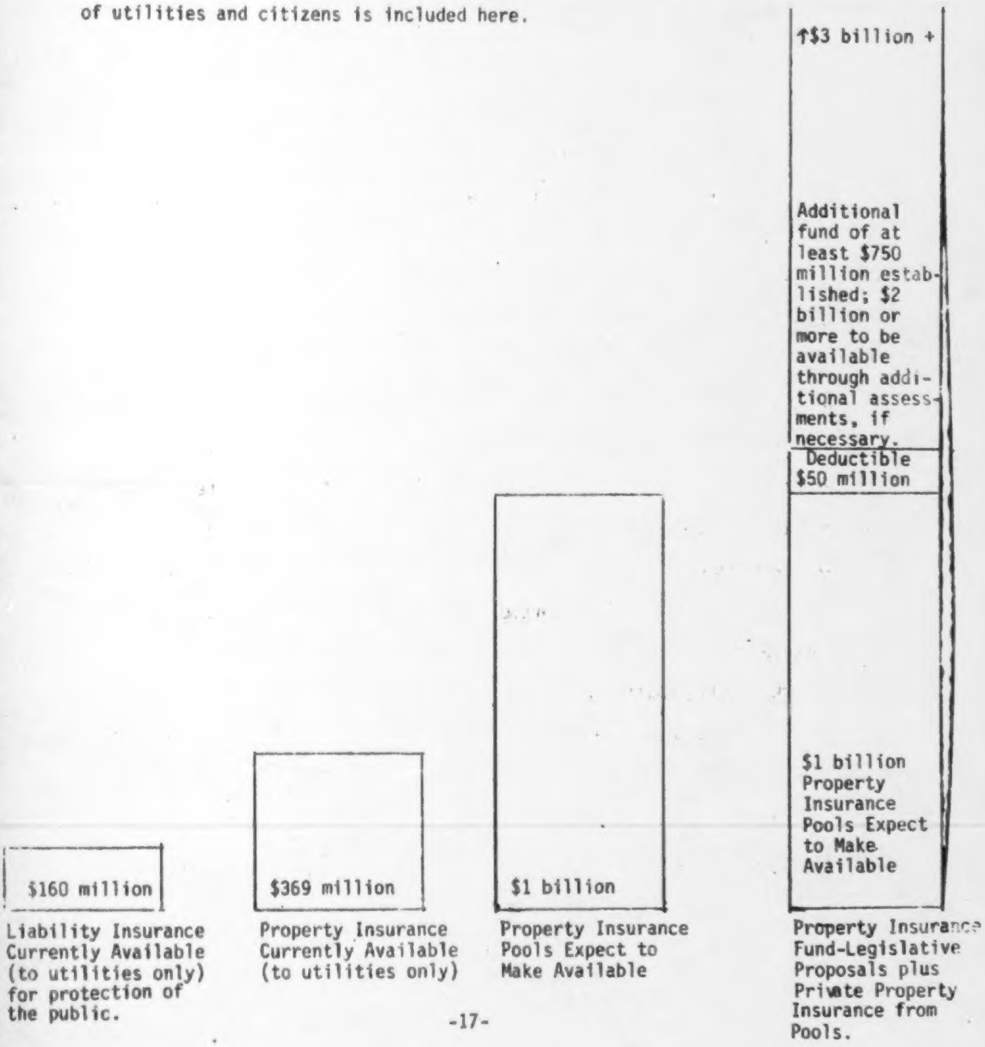
The Price Anderson Act makes no provision for property insurance for the utilities. But the nuclear insurance pools have established a thriving business in helping utilities protect their own property in the event of accident. While the pools have consistently claimed that they can write no more than $160 million in liability insurance for the public's protection, they currently make available $369 million--over twice that amount--for utility property insurance coverage. And the insurers have announced they intend to make approximately $1 billion in nuclear property insurance available in the near future.

Obviously, proposals to increase the amount of property insurance available either by federal law (i.e., S.1606, H.R.2512) or voluntarily, through the nuclear insurance industry, would create an absurd situation with respect to citizen protection: while homeowners, businesspeople and citizens would be minimally protected in the event of an accident--it has been estimated that a serious nuclear catastrophe could cause $30 billion in damages--the industry's own property would be fully covered.

It is clearly inequitable to limit citizen access to the courts to obtain legal redress against those reponsible for a nuclear accident, while establishing a federally-supported system to make utilities nearly

100% whole after a catastrophe. Under S.1606 and H.R.2512, a utility could literally rebuild a destroyed nuclear plant "a couple of miles down the road" while citizens would be left uncompensated.

A chart illustrating the potential disparity in federal protection of utilities and citizens is included here.



Historically, and logically, claims for property damage to nuclear facilities are much more likely to be made than liability claims. Property insurance should thus be viewed as riskier than liability insurance, and should be less abundant and more expensive than liability coverage. Yet the nuclear insurers have been eager to write increasingly larger amounts of property insurance, while providing minimal liability protection.

The reason lies in the Price Anderson Act itself. Because the nuclear industry's legal liability is ultimately limited by the Act, there is no incentive to seek additional liability coverage. On the other hand, the same insurance companies which participate in the nuclear insurance pools are major investors in nuclear energy. They have an obvious self-interest in protecting their investments by writing property insurance for the utilities.

Questions of federal involvement in the accident at Three Mile Island must be considered in the context of the Price Anderson Act. One federal action which we believe should be taken as a result of the TMI mishap is the repeal of the Price Anderson Act, or its revision to eliminate its subsidization of nuclear power and to protect potential victims of a nuclear accident.

CONCLUSION

To summarize:

1. The public health and safety requires a safe and expeditious clean-up, decontamination and decommissioning of Three Mile Island.
2. GPU is not in imminent danger of insolvency; there are many options for maintaining its ability to quickly and safely clean up Unit 2.
3. There is no need, at this time, for direct or indirect financial assistance from the federal government.

4. The Price Anderson Act should be repealed or rewritten to eliminate its subsidization of nuclear power and to protect potential victims of nuclear accident.

For thirty years the federal government has subsidized the commercial nuclear industry. In response to the demands of the large corporations interested in developing nuclear power, the Congress early on limited the industry's legal liability to the public in the event of an accident. Now, the Congress is being asked to foot the bill for an accident at a nuclear power plant. In essence, GPU and the industry argue that, having given nuclear power its start, it must prevent it from going under, anywhere, anytime, for any reason. For the taxpayer, the time has come to say "no" to yet another unnecessary subsidy for nuclear power.

NOTES

1. J. Bowring, Federal Subsidies to Nuclear Power, Draft, DOE, March 1980.
2. 42 U.S.C. sec. 2011, et. seq.
3. The Bankruptcy Reform Act of 1978, P.L. 95-598.
4. New York Times, Sept. 26, 1981, p. 6.
5. Draft Programmatic Environmental Impact Statement...Three Mile Island Nuclear Station, Unit 2, NRC, at S-3 (July 1980).
6. Experts have predicted that the core will be found to be damaged beyond repair. See New York Times, Jan. 6, 1980, p. c1.
7. Letter of July 23, 1981.
8. Washington Post, Oct. 16, 1981, p. A9.
9. GPU's energy mix is 34% nuclear. GPU's pre-TMI capacity reserve margin was [illegible]7%; without Units 1 and 2, its margin is 24%. (TMI: The Financial Fallout, GAO Report EMD 80-89, July 7, 1980 at 10.) A 15% reserve margin is generally considered prudent.
10. See Staff Report to Kemeny Commission, The Presidential Commission on the Accident at Three Mile Island, The Role of the Managing Utility and Its Suppliers, Oct. 1979, at 190-201; NRC Special Inquiry Group, TMI: Report to the Commissioners and to the Public, Jan. 1980, Vol. II, Part 2, at 573-612, Part 3, at 809-854.
11. Testimony before Subcommittee on Energy and the Environment, Committee on Interior and Insular Affairs, U.S. House of Rep., May 4, 1981, at 3.
12. Feb. 1981 Consolidated Balance Sheet.
13. Appendix B, GPU Submission, May 1, 1981 hrgs.
14. Testimony of William Kuhns, GPU, before House Committee on Interior and Insular Affairs, Subcommittee on Energy & Environment, May 4, 1981, at Appendix B-1.
15. GPU Public Affairs, 10/18/81.
16. GPU Public Affairs, 10/18/81.
17. Submission to Rep. Allen Ertel from Herman Dieckamp, GPU, Sept. 26, 1980, at 8.

18. GPU Response to Questions Submitted by House Energy & Commerce Commitee, Subcommittee on Energy Conservation & Power, April 24, 1981 at 4-4, 6-3.

19. Submission of GPU President Herman Dieckamp to Rep. Ertel, Sept. 26, 1980, at 15-16.

20. Civ. Action No. 80, U.S.D.C., S.D.N.Y., filed March 25, 1980.

21. Testimony of William Kuhns, supra Note 14, at Appendix J.

22. GPU Annual Report, 1980, at 13. GPU Responses to Questions, supra Note 18, at Table 16-2.

23. GPU Responses to Questions, supra Note 18, at 8-7; Testimony of William Kuhns, GPU before House Energy & Commerce Committee, Subcommittee on Energy Conservation & Power, May 1, 1981 (hereafter May 1, 1981 Hearings) at J-11.

24. New York Times, April 3, 1981, at D-1.

25. At least one state legislature--that of Connecticut--is considering prohibiting any passthrough of TMI clean-up costs to state ratepayers.

26. Nuclear Electric Insurance Limited, Information Circular, Dec. 18, 1979.

27. Testimony of Richard Schmalz, American Nuclear Insurers, May 5, 1981, Hearings, supra Note 11.

28. For detailed examples of reports, prepared by interested parties, which reject the bankruptcy option as catastrophic, see Report on Analysis of the Potential Effects of Bankruptcy, Draft, prepared for The New Jersey Board of Public Utilities, (NJBPU) by Arthur Young (Sept. 1980) and Analysis of Strategic Options to Finance Continuing Electric Power Service in the Jersey Central Power and Light Company Franchise Area, also by Arthur Young, see NJBPU (April 1981).

29. See Dean Witter Reynolds, Inc. Newsletter, 1/9/81, p. 4-5.

30. During the 1956 hearings on the original Act, Senator Anderson indicated that the amount was small enough to "not frighten the country or the Congress to death," but probably large enough to protect the nuclear industry. (Joint Committee on Atomic Energy, Hearings on Atomic Energy and Government Indemnity, U.S. Congress, 84th Congress, 2nd Session (1956) at 110.) Indeed, the $560 million figure can be attributed to the assumption--or wish--of nuclear power supporters that an atomic energy accident would never happen. As Senator John Pastore bluntly put it during his shepherding of the 1975 extension of the Act through the Senate, "...Senators say to me, 'But what if you have an accident where the damages are over $560 million?' I say, 'God Forbid!...We would close down the whole caboodle.' ...If Pastore thought for one minute we were gambling with an accident here that goes over $560 million, I would be the first one to say, 'Let's call it quits.'" Congressional Record, Dec. 16, 1975, at S. 22339.